JANUARY/FEBRUARY 1996
Volume 9 Issue 3
Price £2.30

RISC user

The magazine for users of Acorn RISC computers

on CD ROM

The Bondar Interview

ART's New Director Reveals All

Wrigley's Round-up

CD ROMs by the Satchelful

Acorn Paint it Black

BETT Spray Job for the Risc PC

THE MAGAZINE FOR USERS OF ACORN RISC COMPUTERS

RISC User

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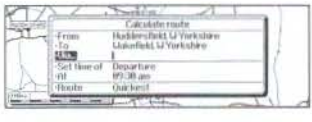

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Front Cover Photography
Lee Calcraft

Everyone would agree that Acorn had a very difficult year in 1995, and its reorganisation with associated job losses was an unpleasant but necessary step to cope with its changing position in the computer market. With that annus horribilis out of the way, though, New Acorn can look to the future with a great deal of optimism. At a time when Apple, the other great 'I am' in the world of individualistic computing, is experiencing very difficult times and considering redundancies and internal restructuring, Acorn's star is once again in the ascendant. After its shake-up, Acorn has emerged as a leaner company which looks more attractive to outsiders; and, indeed, Acorn share prices have been rising dramatically recently.

Why should this be? Well, the news pages explain at least part of it, and our exclusive interview with Peter Bondar, Director of Applied Risc Technologies (Acorn's research and development wing) on page 17 hints rather further into the future. Acorn's forte has always been technological innovation, but the key to success lies in partnership with the right people, and this is an area in which Acorn's achievements have hitherto been less impressive. All that seems set to change, however, after the announcement of an agreement between Acorn (note Acorn rather than Online Media) and the US software giant, Oracle.

In last month's editorial, at a time when rumours were rife, I hinted at the possibility of Acorn diversifying into a different market by creating a low-cost box to sit between the television set and the phone line and provide access to the Internet. The Oracle announcement puts this into a much clearer light; and it is interesting to see that ViewCall, an international company which is not obviously related to Oracle, is also making use of Acorn's technology in another product along the same lines. It seems that not only is Acorn the first company past the winning post with the necessary technology, but it is also going to be setting the standards about how that technology is used. For the first time ever, a non-Acorn box exists which is based on Acorn components and RISC OS, and more will follow.

It has already been noted by some observers that companies are buying Acorn equipment in order to be in at the beginning of the new developments; so even at this early stage, the signs are very promising. It will take time for new developments to filter back into Acorn's desktop computer market; but as long as development machines, at the very least, are needed, it will surely happen. Acorn seems at last to be holding the winning cards and making the right moves. Long may it continue.

Richard Hallas

RISC User is published by Beebug Limited.
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Beebug Ltd. ©1996
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sales@beebug.co.uk ISSN 0966-1913

A Close Call

In RISC User 9:2, we detailed an announcement by ViewCall Europe of its new Web-surfer set-top box called WEBster, a device designed by Online Media which hooks up to a TV set and a phone line to give consumers access to the Internet and online services. Under the banner of TV Internet access and email for everyone, ViewCall's device is categorised as a Web Station or Internet 'Lite' unit, and is half the cost of a stand-alone PC. Alongside the regular World Wide Web facilities, ViewCall will be offering its own special online shopping services which will utilise proprietary fractal-based image compression techniques to increase the speed of downloading of graphics by a factor of four. A UK trial service was launched in January with 1000 users, and several major UK companies have already signed up as service-providers for ViewCall users.

ViewCall's *WEBster*: designed by Online Media and running RISC OS.

The really interesting part is that, like the Oracle announcement, this is a more fundamental tie-in with Acorn than just a partnership with Online Media would suggest. In fact, the ViewCall box incorporates RISC OS, and is the first non-Acorn piece of hardware to do so. The press release claims that "anti-aliasing algorithms ... improve text to a level formerly believed unobtainable on TV screens", which demonstrates that Acorn's almost decade-old technology in this field is still leading-edge. The ViewCall press release also makes much of "Acorn Computers' ultra-low cost/nigh performance ARM RISC operating system".

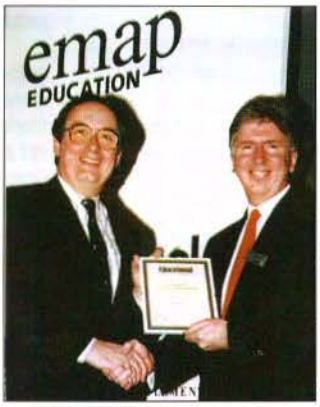
An infra-red hand-held control is supplied for normal use, and can be used (by a method unspecified) for email messages. A full QWERTY infra-red keyboard is available as an optional extra. ViewCall hopes that it will have £250 boxes available for rental or lease to the UK and European public in volume by this summer. Contact ViewCall Europe Plc at Chesham House, 150 Regent Street, London, W1R 5FA, email viewcall@easynet.co.uk, tel. 0171 439 3187, fax 0171 734 4166.

Paint it Black

Forget Acorn green, ART orange and Online Media blue. Today's colour is black. Black Risc PCs, black A7000s, and of course black Pocket Books and set-top boxes. Acorn staff have been busily spraying all their kit black so as to present a unified range of products. The new *MediaRange* launched at the BETT Show consists of five different packages designed to meet the needs of education.

Careful, the paint's still wet! Boy sticks to *MediaMaker*, while girls look on.

At the top of the range is the *MediaMaker*. Based around a Risc PC, this allows pupils to originate multimedia materials, and to edit them into presentations which can be viewed on a television screen or on other hardware in the range.



Photography: Lee Calcraft

Another gold award for the Risc PC. Will Mike O'Riordan make better use of it than Sam Wauchope did last year?

The *MediaProcessor* is based on an A7000, and while it lacks the ability to capture and edit video, you can still use it to create multimedia productions. Acorn's other computer, the Pocket Book, constitutes the entry-level package in the range, the *MediaPad*.

The two remaining systems are the *MediaSurfer* and *MediaSelector*. The first allows you to 'watch TV or search the Web', and may well be based on the Oracle box (see our separate news item), while the *MediaSelector* looks just a tad like a set-top box.

Now, although Acorn has been very busy with the aerosols at BETT, the blackness is really a bit of a stunt (masterminded by Dick Wallin of Acorn Education, we hear), and it is not their intention to actually produce computers in TV-black.

Proof that cream Risc PCs are okay (if proof were needed) came once again this year at the BETT Educational Computing award ceremony, where Acorn scooped the gold award for a second year running in the Hardware category. And of the software winners, almost all were either Acorn-native products (like *Crystal Rainforest II* and *Guardians of the Greenwood*), or were products available on the Acorn platform, such as *HyperStudio*.

Internet ANTics

ANT has made various announcements regarding its Internet software-related activities. The ANT Internet Server is a CD-ROM-based package for Windows NT servers, such as Acorn's SchoolServer, and provides full Internet access across an entire institution. It includes email, Usenet news, FTP and World Wide Web gateways, as well as various security features, and aims to remove much of the burden of maintaining Internet access from network administrators. It is expected that the product will be launched during the second quarter of the year.

ANT and Acorn Education have jointly announced a plan to support a full range of Internet users from individuals to campus-wide networks. The ANT Internet Suite and ANT Internet Server, together with release 2 of Acorn's InterTalk, will inter-communicate with and be complementary to one another in their provision of Internet support for the full spectrum of educational needs. This announcement marks a significant point in the development in Acorn's own Internet software, which has thus far led a somewhat troubled existence.

ANT has also announced that its Internet Suite has been adopted by BT CampusWorld, and will be supplied to Acorn users joining their educational Internet service. ANT Ltd may be contacted at PO Box 300, Cambridge CB1 2EG, email sales@ant.co.uk, tel. 01223 567808, fax 01223 567801.

ARTful moves

As a result of last year's reshuffle and in an effort to reduce costs, Acorn has been moving departments around. Applied Risc Technologies has moved premises back to Acorn's old Newmarket Road address, and now occupies the suite next to Online Media. The new address is:

Ditton House
Cambridge Technopark
645 Newmarket Road
Cambridge CB5 8PB
Tel. 01223 254254

The telephone number listed is actually the Acorn switchboard, which can put you through to ART. A separate telephone number will be available in due course. Online Media shares an identical address, but their phone number is different: 01223 518518. Acorn Education remains, for the time being at least, at the following address, though it is likely to move quite imminently:

Acorn Education
Acorn House
Vision Park
Histon
Cambridge CB4 4AE
Tel. 01223 254254

Clan members will be pleased to hear that the man in charge of the enthusiast and VAR markets, Chris Cox, is no longer directly affiliated with Acorn Education, which had been a minor bone of contention in recent months. Instead, he is now working directly for Peter Bondar at ART, which seems far more appropriate for the interests of Clan members.

Individual Acorn employees can be contacted by email using the following addresses:

name@acorn.co.uk for Acorn Education;
name@applied-risc-tech.co.uk for ART;
and *name@omi.co.uk* for Online Media.

name takes the form of one initial plus surname, all in lower-case and with no full stops; so, for example, Chris Cox' email address is:

ccox@applied-risc-tech.co.uk

Integrex launches a new colour printer

Integrex has announced the *Betajet C Banner*, a new CMY colour bubblejet printer. Claimed to be possibly the lowest-cost colour inkjet printer currently available, the price of the unit is £139 + VAT, or £159 + VAT with an automatic cut-sheet feeder with a capacity of 70 sheets. The printer can print on a variety of paper stocks, envelopes, labels and OHP transparencies, and comes complete with a 35-metre paper roll holder for banner printing. When monochrome printing is required, the colour cartridge can be swapped for a mono one. The printing resolution is 300 by 600dpi, though the speed seems sluggish at up to 2 minutes per mono page, or from 2.5 minutes per colour page. The printer is supplied with free banner-printing software for Acorn machines. For further details, contact Integrex Ltd, Church Gresley, Swadlincote, Derbyshire DE11 9PT, tel. 01283 550880, fax 01283 552028.

Roll out the banner with Integrex' latest bubblejet.

Cherisha Moves

Cherisha Software, producer of the Observess expert system shell for RISC OS, has changed premises. The new address is:

Cherisha Software
16 Woodside Drive
Wilmington
Dartford
Kent DA2 7NG

Observess is undergoing continuous development, and has now reached version 2.60. A new version 3, which will feature a backward-chaining inference engine, is promised for later this year.

A sea-change for Acorn?

We in the Acorn world have become all too used to defending our machines against the unheeding masses, frustrated by the knowledge that Acorn's innovations never seem to earn the recognition they deserve. Well, perhaps that is set to change.

Fortuitously, on the very same day (10th January) that Acorn launched the MediaRange came an announcement of fundamental importance, saying that the Acorn Computer Group had entered into an agreement with Oracle Corporation for the development of reference designs for a range of low-cost Network Computing products. These Network Computers will have small RAM requirements and no local hard disc, and will make use of open Internet standards such as HTML and Java.

The announcement makes no mention of a firm product as such, but it implies that Acorn will be fundamental in the design of what amounts to a new breed of computer system. It's very significant that the agreement is with the Acorn group overall, rather than just the Online Media part of it; so it would be reasonable to speculate that the proposed Network Computers will be based not only around Acorn hardware but on software too; specifically the RISC OS operating system. This has to be extremely good news for Acorn users because it virtually guarantees the continued development of Acorn's operating system, which of course is one of the most fundamental features that make Acorn computers so popular with those who use them.

Oracle is a huge company with the resources necessary to take on Microsoft, and a stated aim to do so. The company's wish is to create low-cost computers that can make full use of the Internet whilst being significantly cheaper than the multimedia PCs (of any sort) which are currently needed to take advantage of it. With Acorn's technology as a foundation, there is little doubt that it will be possible for Oracle to fulfil that wish. Whether it will be able to affect Microsoft seriously is another matter, but there should be some interesting times ahead.

New releases from iSV Hot on the heels of the *ViVID20* screen enhancer, iSV Products has launched *ViVID CGA* for older Acorn machines, which allows 50Hz TV-style monitors to display similar screen modes to ViVID20. ViVID CGA offers apparent desktop work areas equivalent to 1600x1200 and beyond, at screen refresh rates up to 60Hz. ViVID CGA requires RISC OS 3, but does not require a VIDC enhancer, and is priced at £11.50 (fully inclusive). The software is not intended for VIDC20 machines (Risc PC and A7000).

Also now available is an application for creating stand-alone documents which include text and graphics, such as online manuals. *InformED* offers OLE links with Draw and Edit, automatic compaction of files and a document size limited only by available disc space. It is also well suited for network use because it is not disc-intensive. *InformED* costs £26.50 (fully inclusive). Contact iSV Products at 86 Turnberry, Home Farm, Bracknell, Berks, RG12 8ZH, tel. 01344 55769.

Power processors from Aleph One Aleph One has introduced a new Pentium-class PC co-processor card for the Risc PC. The Cyrix 5x86 card is available for £499 + VAT. The next version of the *PC x86* card software will add full support for Windows 95, and planned future developments for the software include enhanced disc and video drivers, further utilities for PC/RISC OS data exchange, and support for the Linux operating system. Contact Aleph One Ltd, The Old Courthouse, High Street, Bottisham, Cambridge CB5 9BA, email sales@aleph1.co.uk, tel. 01223 811679, fax 01223 812713.

New educational titles ESM has announced several new educational Acorn titles for Key Stages 1 and 2. *Micropedia '96* is a new edition of the talking encyclopedia CD-ROM, and costs £90 + VAT. *Kid Pix 2* is a talking painting and drawing package with animation, sound and slide show facilities, and costs £39.95 + VAT. Finally, *Seelinks - Pond Watch* is a visual data-handling program which allows children to investigate pond life. It costs £27.95 + VAT. Contact ESM, Abbeygate House, East Road, Cambridge CB1 1CB.

Meanwhile, *Almost Logo* and *Aegis 2* have been announced by The Advisory Unit: Computers in Education. The former is a turtle graphics maths package with support for Draw and sprite files and even music, whilst the latter is a geographical package for displaying data based on maps, such as population density and employment. Almost Logo costs £25 (£75 for a site licence) + £2 p&p ex. VAT, while Aegis 2 costs from £100 + £3 p&p ex. VAT. Contact The Advisory Unit: Computers in Education, 126 Great North Road, Herts, AL9 5JZ, tel. 01707 266714, fax 01707 273684.

Boost for Acorn Advantage Acorn Education's *Advantage* loyalty scheme, which offers free curriculum resources to schools in exchange for Advantage points, has been boosted by new partners in 1996, including Ladybird Books, Parker and Paper Mate Pens, Helix, and now Midland Bank and Fina Plc. Midland will be offering Advantage points as an alternative to its annual cash donations to secondary schools, whilst *Fina for You* vouchers, collected when purchasing petrol at Fina stations, can be exchanged for Advantage points vouchers and donated to schools.

CHARM

Charm is a high level language like Pascal or C. Over the last four years Charm has been continuously developed. Now available is the best Charm yet with all the features any RISC OS language should have.

- Support for floating point variables
- Support for the Acorn Toolbox
- Comes with Acorns ResEdit to edit toolbox resources.
  (prices for C++ Toolbox manuals available on request)
- Supplied on two discs with printed manual and case
- Compiler, linker, assembler, editor, desktop environment, profiler
- Numerous examples - Toolbox demo, Chinese checkers, Arcade style game, Scientific calculator.

Unlike C, Charm can easily be used on 1Mbyte and floppy disc based systems.

Charm pack price £25 (inc VAT and carriage).

Upgrade from Charm disc to Charm pack £18.
(Upgrade from older versions of Charm pack - return old discs + postage.)

ImageMaster/TWAIN

ImageMaster with TWAIN, gives you access to high quality A4 flat bed colour scanning at low PC market prices, and lets you use your scanner from more than one program.

ImageMaster - Image processing/acquisition.

- Read/Write TIFF, JPEG, PCX, PBM, Clear, Sprite, BMP, GIF. Write EPS.
- Handles images bigger than RAM - "virtual memory".
- Works with 1,2,4,8,16,24 and 32 bit per pixel images directly. No wasteful increases in bpp
- Processing, resample/rescale, user filters, colour balance, non-linear contrast adjustment. Supports RGB, HSV and CMYK.
- Editing, Rotate, Crop, Shear, Flip images.
- Change colour resolution, with Floyd Steinberg and ordered dithering. Optimised palettes.
- Trace (convert sprites to Draw files), D2Font (convert Draw files to fonts). Snapper (screen capture program), Zero (photocopier).

TWAIN - Scanner drivers

TWAIN is a standard range of scanner drivers. Available scanners;

Epson GT 5000, 6500, 8000, 8500, 9000 parallel/SCSI
Mustek Paragon/Microtek Scanmaker II
UMAX Vista S6/8
HP ScanJet IIp, IIc, IIcx, 3p, 3cx, 4c
Canon IX 3010 IX4015
Agfa Arcus II/plus

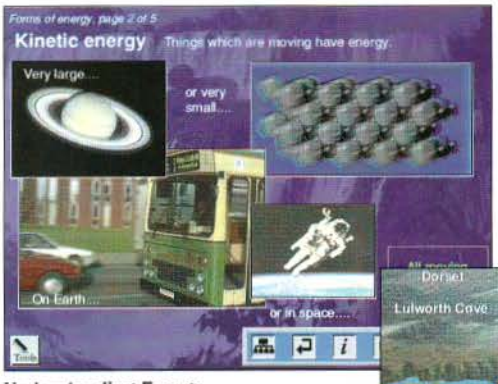
ImageMaster+TWAIN for one scanner £35.00 (inc VAT and carriage)
ImageMaster alone £30, TWAIN drivers alone £20.

David Pilling, P.O. Box 22, Thornton Cleveleys, Blackpool. FY5 1LR. UK.
Free Air Mail delivery on overseas orders. email david@pilling.demon.co.uk

CDs Galore

A round-up of some recent CD-ROM releases by Alan Wrigley

Over the last few months the CD-ROM scene on the Acorn platform has been hotting up - no doubt as a result of the pressure to keep up with the burgeoning PC multimedia market. Very recently there have been some exciting developments over Dorling Kindersley and Microsoft CD-ROMs (see the feature *What's Cooking at Innovative Media Solutions?*, RISC User 9:2 page 8). Meanwhile, those stalwarts of the Acorn scene, Anglia Multimedia and Yorkshire International Thomson Multimedia (YITM), have continued to put resources into RISC OS CD-ROM releases, and this review will take a brief look at some of the most recent ones. The products covered here are *Aspects of Religion* from YITM, and the following titles from Anglia: *Understanding Energy*, *The Industrial Revolution*, *British Isles from the Air*, *Seashore Life*, *Vikings!*, *Art Store* - *Looking at Animals* and *The World's Weather*.



Understanding Energy

All the Anglia CDs share some common features, such as the ability to choose between full-screen and desktop operation, context-sensitive menus to save pictures and text to disc, tools such as a notepad and calculator, and Draw files of activity sheets provided for the use of teachers.

Have you got the energy?

Understanding Energy aims to answer the following questions: "What is energy?", "Where does it come from?", "Who uses what?" and "What is the future for energy?". These categories form the main menu screen. The whole structure of the CD-ROM is laid out in a logical manner, allowing you to browse around the subject as you would in an encyclopedia, without ever getting too lost.

British Isles from the Air

The CD has clear explanations of all aspects of energy in a highly readable style - processes, units, world consumption statistics and much more, all illustrated graphically by high quality, clear and colourful photographs, graphs, animations and video sequences. It appears to cover almost everything that anyone might want to know about energy, from a description of the workings of a nuclear power station to an explanation of how to read an electricity bill! A glossary is available at any time, from which you can choose any subject and get a screen of information.

A lot of thought has gone into the presentation of this CD. For example, in many cases a diagram will appear, with a button marked *Labels*. Click on this and all the elements of the diagram are instantly labelled. This allows you to view the diagram with or without the clutter that necessarily results from a lot of overlaid labels. This is a really excellent CD-ROM, produced to the highest professional standards, which will fascinate and inform anyone who has the slightest interest in where we get our energy from and what we do with it.

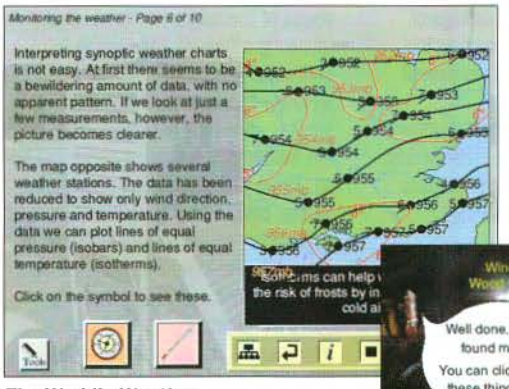
In-flight entertainment

Aerofilms is one of the best-known names in the UK for aerial

Oystercatcher
If you are lucky you may see an oystercatcher feeding on the shore. They will rest on shingle when they are not feeding. Oystercatchers feed mainly on cockles and mussels.

Seashore Life

photographs, and the *British Isles from the Air* CD-ROM has been compiled from their extensive library of modern and historic aerial photos of the UK and Ireland. The interface is straightforward, consisting of an aircraft cockpit from which you can choose to see a map of the region, and then select a location by clicking on a little black dot; a list of 31 physical features such as chalk scenery, marine erosion, waterfall, floodplain and so on,

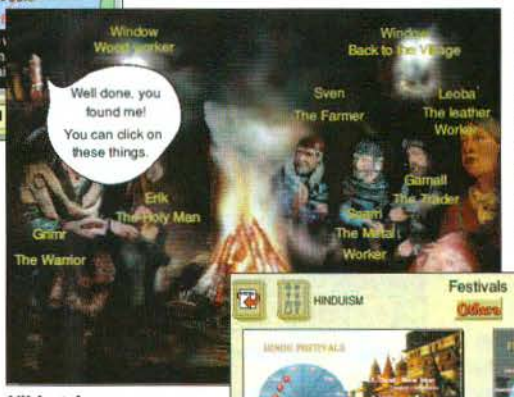

Monitoring the weather - Page 6 of 10
Interpreting synoptic weather charts is not easy. At first there seems to be a bewildering amount of data, with no apparent pattern. If we look at just a few measurements, however, the picture becomes clearer.
The map opposite shows several weather stations. The data has been reduced to show only wind direction, pressure and temperature. Using the data we can plot lines of equal pressure (isobars) and lines of equal temperature (isotherms).
Click on the symbol to see these.

The World's Weather

which you can select to show pictures of that type of feature; and a similar list of man-made features such as airports, pollution, rural settlements, manufacturing industry etc. There is also a brief section describing how and why aerial photos are made.

Despite the simple interface, navigating this CD was much harder work than it should have been! When accessing locations from the map, you have to click exactly on the required point (which is only a few pixels across at all magnifications) to see the photo - if the mouse slips by a pixel as you click, nothing happens. For people with an unsteady hand this gets *very* frustrating! Although you can zoom in and out of the map using the mouse with the Shift and Ctrl keys, the window size is fixed and you can't move the map around, so if you zoom in to one area and then want to view another, you have to laboriously zoom back out and then in again. The photo pages themselves are confusing at first, until you realise that the unreadable text headed "Description" is not meant to be read, but is merely an icon to click to get the real description. Some of the descriptions seem very bald and often sound dull, the overall impression being utilitarian rather than fascinating.

The pictures and data on this CD are no doubt of great value in many educational situations. There are even apparently some historical photos dating back to 1922, but it isn't obvious where they are until you happen upon them. But the presentation of the CD as a whole cries out for a more imaginative touch. For example, under *Waterways* you



Vikings!

will find a picture of Birmingham's 'spaghetti junction'; the canals are there all right, but dwarfed by the concrete. Why couldn't labels be added as with *Understanding Energy* to allow you to pick out each element in a scene?

I'm sure that many of these pictures are very useful for understanding geographical formations and the impact of man on the environment, but it could have been done so much better. The lack of care is reinforced by groups of icons which don't align correctly, indicating perhaps a hasty compilation.

Beauty and the beast

Art Store - Looking at Animals explores the use of animals in works of art. You can explore the subject through an A-Z index of artists; via one of four themes: wild, trained, working and domestic animals; via a database of museums around Britain which contain appropriate works; or by reference to a complete list of all the pictures included on the CD. Navigation around the CD is straightforward (though there is inconsistency in the appearance of the navigation icons throughout the database).

There is a great deal of useful information on this CD, and by and large it is well organised. You can browse through many paintings and sculptures depicting animals, read biographies of the artists, and see details of museums around the country that hold these

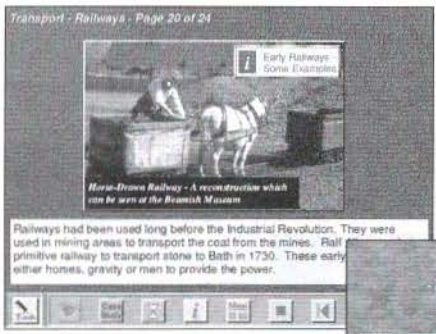
HINDUISM
Festivals
ISLAM
Introduction
It is difficult to generalise about any one aspect of Hinduism. It is necessary to
Introduction
The Islamic calendar is based on lunar months, and festivals are observed

Aspects of Religion

and other works (including location maps and opening hours). There is some background information in some cases, but the links are not always consistent throughout the whole database. For example, there may be a link to somewhere from an artist's biography in the themed paintings

section that's missing from the biography in the A-Z of painters.

I would also have liked to see the paintings categorised in some way by date and/or period; dates are not immediately obvious until you either look up the artist or get several layers down into the picture database. The ability to compare animal portraiture (not to mention painting styles) from period to period would have been a worthwhile addition, especially for understanding issues such as animal welfare.


Transport - Railways - Page 20 of 24
Early Railways - Some Examples
Horse-Drawn Railway - A reconstruction which can be seen at the Beamish Museum
Railways had been used long before the Industrial Revolution. They were used in mining areas to transport the coal from the mines. Ralf
primitive railway to transport stone to Bath in 1730. These early
either horses, gravity or men to provide the power.

The Industrial Revolution.

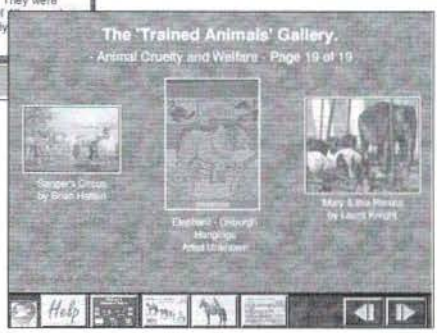
Nevertheless, as an introduction to a particular aspect of fine art, this is a useful and generally well compiled CD-ROM.

Industrial cycle

The Industrial Revolution examines the course and the effects of its namesake from 1750-1900, under four main themes: *Agriculture*, *Industry*, *People* and *Transport*. Navigation has been well thought out, with an icon bar allowing you to move around easily from frame to frame or menu to menu, to read and hear eye-witness reports on the topic being displayed, and very usefully, to see a timeline showing the major events on each theme between 1750 and 1900, which you can then access directly to get more information.

There is a great deal of useful information on this CD. There is no glossary as such, but much use has been made of keywords which are highlighted in the text, allowing you to click on them to get more detailed information. There are photographs, diagrams (some animated), and contemporary drawings, maps showing such things as the distribution of industries or types of agriculture, readily-accessible graphs of relevant statistics, and many audio clips which recreate industrial sounds or are spoken versions of eye-witness accounts of the time. As well as plenty of facts and figures, there are many references to causes and consequences of the various aspects of the industrial revolution, from the broad picture such as why Britain was uniquely placed to take advantage of industrialisation, to detail such as the effect on family life of living on a canal barge.

Additionally, this CD contains some KeyPlus files covering a number of case studies (e.g. the Manchester cholera epidemic and the iron industry).



Art Store - Looking at Animals.

Overall this is an excellent CD-ROM, let down only by a small but irritating redraw problem when used on the desktop, and an equally irritating habit of occasionally running sound clips as soon as you access a page, which prevent you from moving on until they have finished. This is a pity since this CD is the most expensive one reviewed here.

She sells sea shells

One of the advantages of being part of a company engaged in television production is that you have access to an enormous range of high quality visual material. Nowhere is this more obvious than in *Seashore Life*, which has some of the best visuals I have yet seen on an Acorn CD-ROM. The whole package has been designed to look good from beginning to end. Starting out inside a lighthouse, you click on a bookcase to look up data on plants or animals (displayed graphically as pages from a book); on a filing cabinet to explore the subject of classification; on a TV set to view movie clips; on a map to select an area of seashore to explore; and so on.

The structure is consistent throughout. Having chosen an animal or plant to focus on, either from the pages of the reference 'book' or by following a trail via the map to a particular habitat, you can then access all kinds of information about the subject - breeding, enemies, position in the food chain, flowering cycle and so on. There are many audio clips giving crystal clear sound of the habitat in general or the animal in particular, as well as movie clips and animations.

Just about everything about this CD is excellent, from the superb photographs to the way the whole thing is put together. It even has some quizzes to round off what will surely prove an ideal learning aid.

Always take the weather with you

The World's Weather is an introduction to weather and climate, and aims to develop an understanding of the subject with the help of information about weather and climate worldwide, explanations of how it is measured and forecast, and case studies of life in various climatic zones. Its user interface and overall design are very similar to *Understanding Energy*, so I was not at all surprised to find that the quality of the presentation was equally high.

Starting with a description of the nature and formation of the atmosphere, the CD takes you on a trip through the processes involved, such as cloud formation and weather systems, through the causes and effects of the seasons, and forecasting methods and techniques, to climate around the world and how it affects us

(and vice versa). Everything is described in clear, readable text, excellent photographs and diagrams (again, some of them animated), video sequences and many highlighted keywords that bring up extra information on that topic.

A neat touch is that all the visual resources are accessible via an icon on the main menu page, from where you can select any picture from a list. This enables you to save out pictures for use in your own work without having to navigate through the CD to find them.

Once again, this is an excellent product which has been put together with a great deal of care.

Vikings ahoy

Vikings! explores the Viking history and archaeology of the city of York. It is aimed at the same age range as Seashore Life, and has a similar style to its interface. To add to the fascination for younger children, a little statue of Thor is concealed on many screens; if you find it and click on it, the scene is instantly labelled with useful information. In most places throughout the CD a spoken commentary is available as an alternative to the text on the screen.

This CD works both as a source of information and as a multimedia experience which tries to capture some of the flavour of life in Viking times. At an analytical level you can find out about the role of the historian, the archaeologist and the scientist, by examining key personalities and written evidence from the Viking era (all illustrated by quotes from the Anglo-Saxon Chronicle); digging and recording techniques; and the scientific use of evidence such as bones, seeds etc.

Like the Industrial Revolution CD, there is a timeline which you can click on to see extracts from the Chronicle about the date in question. You can also access a list of some 167 historical and archeological objects found in York and elsewhere, and view pictures of these which can then be saved for your own work.

The most interesting part of this CD, however, and the one which will captivate younger children especially, is an animated journey back in time to the sights and sounds of a Viking village. Here you can delve into the world of the people and explore their customs, religion, daily life etc., all with graphic descriptions and sound effects - a cut-down, two-dimensional version of the Jorvik Centre.

As a multimedia experience this is a tour de force, combining graphics, text, sound and animations in a seamless way that will delight and enthrall children.

Religious experience

In presentational terms, *Aspects of Religion* is the heavyweight of the bunch. It comes in a large box containing a ring binder with a user guide and teacher's guide as well as the CD.

The application examines a number of popular religions from two main angles: the religions themselves, their beliefs, history, scriptures, places of worship etc.; and social issues on which religion has an impact - crime, sex, war, poverty and so on. The interface is quite complex, with several dozen different icons explained in the user guide. Religions covered in the social issues section are Buddhism, Christianity, Hinduism, Islam, Judaism and Sikhism; the description section covers all these plus Confucianism and Shinto.

The design of the CD as a whole is based on high-quality graphics, with lots of icons visible on screen to swap between religions, open context-sensitive help windows, make pictures or text larger or smaller, or to get information about a different aspect of the religion. You can also access a glossary and a powerful index via icons from every page. Usefully, the help and glossary screens use a separate window, unlike the Anglia CDs where everything is displayed in a single window and so you must interrupt what you are viewing to get to them. Aspects of Religion also has a *TrailSave* facility which enables you to mark a page and add it to a list of bookmarks so that you can return directly to it at any time. All these features make navigation more flexible than with the Anglia CDs.

Another interesting feature is a *Compare* button which enables you to compare two religions side by side on any of the aspects covered by the CD.

The quality of photos is not generally quite as good as those on the Anglia CDs, though perfectly acceptable for the purpose. There are some video and audio sequences, but the sound quality leaves a little to be desired. The interface is excellent, however, and makes this a very nice CD-ROM to use.

Product Information

Understanding Energy
Key Stage 3 and upwards
£50 ex. VAT

British Isles from the Air
Key Stages 2-3
£40 ex. VAT

Art Store - Looking at Animals
Key Stages 1-4
£40 ex. VAT

The Industrial Revolution
Key Stage 3
£90 ex. VAT
(or £110 including Key Plus)

Seashore Life
Key Stage 2
£40 ex. VAT

The World's Weather
Key Stage 3
£50 ex. VAT

Vikings!
Key Stage 2
£40 ex. VAT

Supplier ***Anglia Multimedia***
Anglia House
Norwich NR1 3JG
Tel. 01603 615151
Fax 01693 622191

Product ***Aspects of Religion***
Supplier ***Yorkshire International Thomson Multimedia***
The Television Centre
Leeds LS3 1JS
Tel. 0113 243 8283
Fax 0113 243 4884
Price ***£79.99 ex. VAT***

BETT 96 Show Report

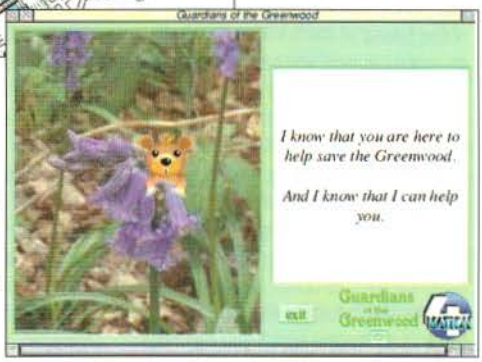
Chris Drage strolls around Olympia with his teacher's hat on

I am very fortunate in that I live only minutes by bicycle from Olympia, the home of the hi-tech emporium we have come to know and love as the BETT Show. I undertake this yearly ritual of hustle, bustle and tight squeeze, with just a little anticipation and excitement. The British Education Technology and Training Exhibition is undoubtedly the world's largest and most prestigious event of its kind, at which you are guaranteed to see the cutting edge of information technology in education, whatever your particular field. Attending the BETT show is almost obligatory for anyone with an interest in IT in education, and this year's show did not disappoint. From an Acorn user's point of view there was a great deal to interest, delight and whet the appetite! This year, the show was a particularly feet-on-the-ground affair with some excellent materials awaiting discovery; you just had to make a determined effort to bypass the glitz and glamour associated with the Microsofts and Novells of this world to get to the pithy bits.

In terms of Acorn hardware there were no new machines being launched at BETT 96, and this is not surprising as Acorn had already launched its new A7000 and Risc PC 700 series at Acorn World. However, various cost-effective Acorn systems were in evidence. SEMERC was showing its own Risc PC- and A7000-based systems, whilst Resource was showing its own Discovery 2000 (A7000) system; all of these systems come with large amounts of bundled software and represent very good value for money. It was interesting to see what bargains could be had: for instance, Castle Technology was offering a 2Mb A3000 with colour monitor for just £185! However, much of the interesting hardware for Acorn machines was in the shape of peripherals. It was good to see the reintroduction of a light pen (Castle Technology) for Acorn computers after an absence of 10 years. Although not completely finished as yet, this product should find great favour with teachers of special education. Despite so much interest being taken in the Internet during the past year, BETT 96 certainly emphasised the coming of age of CD-ROMs on the Acorn platform. What was particularly evident was how the price of CD-ROMs has fallen over the past year. Whereas a £50 CD-ROM would offer only text and pictures a year or so ago, and you had to spend the best part of £100 to get moving video, digitised sound etc. on a multimedia

A hive of activity on the Acorn Stand.

Primary Gold: The World of Robert Burns


Guardians of the Greenwood
I know that you are here to help save the Greenwood.
And I know that I can help you.
exit
Guardians of the Greenwood
Primary Silver: Guardians of the Greenwood.

CD-ROM, the price now is typically around the £60 mark or even less for the latter. There were some terrific titles on display, especially from the TV companies. Of note were the CD-ROMs from SCA (Anglia Multimedia): *Vikings*, *Seashore Life*, *British Isles from the Air* and *Nelson and the British Navy*. Previews, too, could be had of some excellent titles in the pipeline: *Being a Scientist* and *Survival Mysteries of Nature*.

Yorkshire International Thompson Multimedia (YITM) had their award-winning *Aspects of Religion* on show as well as the new *Breakaway Maths* for less able Key Stage 2 pupils. It is good to see a piece of software encouraging work away from the computer, and *Breakaway* develops problem-solving skills both on and away from the machine. Children love the theme park scenario. Other CD titles on show were *Maximania*, designed to help develop reading skills in 4- to 7-year-olds, and the excellent mixed media resource, *Early Victorians*. If you have an interest in this aspect of British history and haven't had an opportunity to see *Early Victorians*, then I implore you to do so; it is superb. Look out for other new titles from YITM: *Late Victorians*, *Max and the Machines*, *Science Explorer* and the excellent *Essential Steps to Swimming*. Anyone involved in teaching or learning to swim must purchase this program!

Primary Bronze: Mission control: Crystal Rainforest 2.

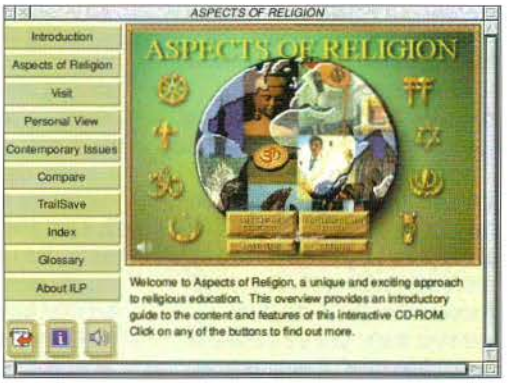
It was not only the TV companies which were displaying the best of CD-ROM-based software: the award-winning *World Of Robert Burns* represents a major resource based on the works of this world-famous Scottish poet and song writer. The CD contains a simulation, photographic records and all of Burns' poems and songs, as well as a time line and video. What is particularly impressive is its depth and scope, as it provides a good look at life in his time for anyone aged from eight years upwards.

ESM had an even better *Kingfisher Micropedia* for primary schools. This is an updated 1996 version with added features including more video clips. The one to watch out for, though, is *Life Cycles*, a combined CD-ROM and video resource which looks as if it could be the last word in the study of the life cycles of different animal groups.

Creative Curriculum Software had its very interesting *Mechanisms* CD-ROM on show along with a new one, *Language Master* for English, French, German and Spanish learners. Another CD-ROM of note was Longman Logotron's *Victorian Crime and Punishment*, which provides enough materials to keep a Key Stage 2 or 3 class busy for a whole term. IMS (Innovative Media Solutions) had its unique PC CD-ROM reader software on show at Acorn World, but this was the first opportunity most teachers have had to see it in action. The first two Dorling Kindersley titles, *The Way Things Work* and *P. B. Bear's Birthday Party*, work extremely well, and schools can look forward to all the other excellent D. K. titles to follow.

Several clip-art CD-ROMs are now available, and these are impressive compilations which will be ideal for school use. The one that impressed me was the *Bitfolio 7* collection sold by Longman Logotron. Having 10,000 images on a CD-ROM is much better than tying up the equivalent hard disc space! The range, quality and style of the images is good. Remember, also, that when you purchase the HyperStudio multimedia authoring software you also get 200Mb of clip-art and 180Mb of sample projects on a CD-ROM. An interesting variant was Hampshire Microtechnology Centre's CD-ROM created by teachers at primary and special schools. The CD contains three Genesis multimedia applications covering *The Alps*, *The River Itchen* and *The World of Work*. All are quite impressive.

With Ofsted inspectors reporting their general criticism of data logging, data capture and the interpretation of data this year, companies have striven to make the task of measurement in science that much easier with a range of new data-logging devices and software. One of the neatest ways to do this was being demonstrated on the Acorn stand, where Pocket Lab was being put through its paces. This highly portable system allows data from three sensors to be collected in the field,


ASPECTS OF RELIGION
Introduction
Aspects of Religion
Visit
Personal View
Contemporary Issues
Compare
TrailSave
Index
Glossary
About ILP
ASPECTS OF RELIGION
Welcome to Aspects of Religion, a unique and exciting approach to religious education. This overview provides an introductory guide to the content and features of this interactive CD-ROM. Click on any of the buttons to find out more.

Secondary Silver: Aspects of Religion.

displayed on the Pocket Book, analysed in real time and stored for transfer (if required) to the classroom computer where the data can be imported to a spreadsheet, word processor etc. Data Harvest have been experts in the field for years, and their latest range of sensing and control products covers all levels of education. Their *Pocket SaC* suite for the Pocket Book and the impressive *EasyLog* portable data logger (battery life over 30 days!) represents an excellent and comprehensive system which is easy to use; ideal for Key Stages 2 and 3. Primary schools will find the all-in-one *Contact Controller* with *Prism2000* and *Contact2000* software a very cost-effective solution to the delivery of data logging and control in science and technology at Key Stage 2. Griffin & George had a range of *LogITs*: *Datameter 1000*, their latest 3-sensor logger and the new, low-cost *LIVE* interface, as well as the tried and trusted *LogIT*. All these devices will fulfil the sensing and monitoring requirements from Key Stages 2 to 4 more than adequately. It goes without saying that they all interface easily with software on the full Acorn range.

With so much good software in evidence it is difficult to select the best. For certain, there was something for everyone; or, at least, each curriculum area. Sherston Software is always a first stop for me, and this year I was not to be disappointed: the speech recognition system which turns their popular talking books into talking and listening books, was working well, and responding correctly to a child's pronunciation. This is still at the prototype stage, so it's a question of 'watch this space'. Among Longman Logotron's new releases, the *Numbertime* suite (early maths) and *The Big Picture* (graphic art) look particularly interesting, whilst *Pendown DTP* undoubtedly represents a major development. 4Mation, too, was demonstrating the latest Hans Rijnen adventure for early learners, and *Guardians of The Greenwood*, which appears destined to become a landmark in software development.

But you didn't have to look at the larger software publisher's products to find the gems. Iota may market the outstanding *Image Animator*, but to see how its animations were being used in Resource's *TalkWrite* word processor was truly delightful. *TalkWrite* is now an animated, talking word processor! It's just ideal for helping those with reading or writing difficulties. Similarly, another excellent document creator for children is SoftEase Ltd's *Talking TextEase*, an excellent writing and DTP tool for Key Stage 2. I shouldn't think it will be long before we'll see animations taking place on TextEase pages either!

The Special Needs Village was its usual busy self, and I always welcome the opportunity to catch up with familiar faces. Why is it that this is always the most gender-balanced area of the show? Widget, those leaders in symbol writing, were demonstrating their latest sets of symbols which now seem to be used in a wide variety of software. Similarly, Crick Computing's award-winning *Clicker Plus* software has been enhanced to cover switch units. But I have to say that I was drawn particularly to the Brilliant Computing stand to get a taste of the raucous *Claude and Maude*. SEMERC is always guaranteed to have new and interesting developments on show at BETT, and I was not to be disappointed this year. *Dazzle* is rapidly becoming the number one art program for Key Stage 2; it just keeps getting better and better. But I was drawn to *Doodle*, the musical painting program which is great fun when used with a touch screen.

On the subject of input devices, SEMERC's *Informatrix* is a substantial improvement on all previous Concept Keyboards, and without a doubt represents the definitive system to date. Of note, too, were SEMERC's new *Touch IT* touch screen and *Mouse Pen*. The former is a touch window which permits young children, or those with disabilities, to interact naturally with the software by touching the screen, whilst the *Mouse Pen* is a truly interesting device which can be used with software like *Claude and Maude* for developing letter formation. I was itching to try it with other software!

There was just time to visit Class Act and chat with children of all ages about their experiences with computers and software, their hopes and aspirations. There was so much interesting activity going on it was easy to let the time slip by. At BETT it pays to spend a reflective moment on the mezzanine floor overlooking the main hall and ponder "what's in this exhibition for me as a teacher?". I decided to ask a couple of strangers (who were teachers) at the show the question: "If you had to choose five CD-ROMs for your school resources, what would they be?" It was interesting to note the difficulty this posed. I just wonder if we are in danger of forgetting the grass roots and becoming too carried away with the glitz!

BETT 96 Award Winners

Software: Primary

Gold:	The World of Robert Burns
Silver:	Guardians of Greenwood
Bronze:	Mission Control: Crystal Rainforest 2

Software: Secondary

Gold:	HyperStudio
Silver:	Aspects of Religion
Bronze:	AVP PictureBase

Hardware

Gold:	Risc PC
Silver (joint winners):	RM Infant Window Box *and* RM SEMERC Window Box

Special Needs

Gold:	Switch Clicker Plus
Silver:	TalkWrite
Bronze:	Claude and Maude

Services

Gold:	Internet for Learning
Silver:	The IT Learning Exchange

Acorn at BETT 96

Mark Sealey assesses Acorn's new products from an educational viewpoint

Photography: Lee Calcraft

Acorn has always figured prominently at BETT, and it was heartening this year, after the upheavals of 1995, to see that this hasn't changed. Everything from the design of the Acorn stand to the range, quality and variety of products on show suggested, as many informed educators also remarked, that the company has 'turned the corner'. For example, Acorn was one of four sponsors, other than RM, of the new *NET @ BETT* feature, which had been more closely identified with RM's *Internet for Learning* service. Then there was the Oracle announcement; who knows where that will lead! A 'sneak preview' was given of yet another year of the still controversial Tesco scheme, and extensions to the Advantage programme were announced; surely not things into which partners enter with an ailing company. The Spring '96 Products and Services catalogue contains several significant new entries, and the wider Acorn developer community was as evident at the show as always, after nearly 15 years.

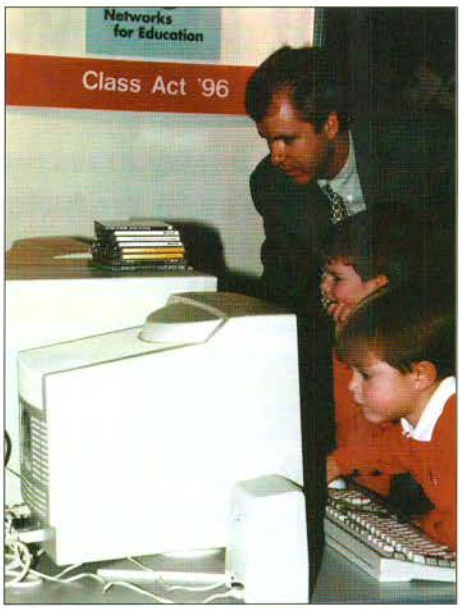
MediaPad in action: I know it's in there somewhere.

MediaRange

Perhaps the most important educational development from Acorn itself, though, is the *MediaRange*. This is a new and radical departure that draws dynamic links between appropriate media (the Acorn range of products) and learning objectives (the curriculum). There has always been an ideological tension between teaching and learning on the one hand and the technology designed to enhance or enable these on the other. Few believe that the balance has always been achieved. Acorn is determined to attract all those wishing to participate into the process, which is a significant departure; but, for probably the first time, the thinking behind the MediaRange appears to have matched the equipment, services and software which good teachers rely on daily to promote the widest span of learning experiences.

Teachers do some surfing at the Net@BETT.

Once some possible conceptual barriers in teachers' minds have been overcome, this ought to be a winner. It's certainly highly significant in educational terms, and ought to be at the very heart of any attempts to remodel learning as more and more people develop positive, pupil-centred strategies to sort out the current mess in UK education. For some time now, Acorn's vision has been of education at the centre of a wide and fluid learning community extending well beyond the school. From another angle, IT itself has become increasingly dependent on interconnections between its components; more sophisticated local- and wide-area networks, the Internet and the 'Information Superhighway' are the best examples. This presents serious dangers: that the learner is either



Doing it with Acorns at Class 96.

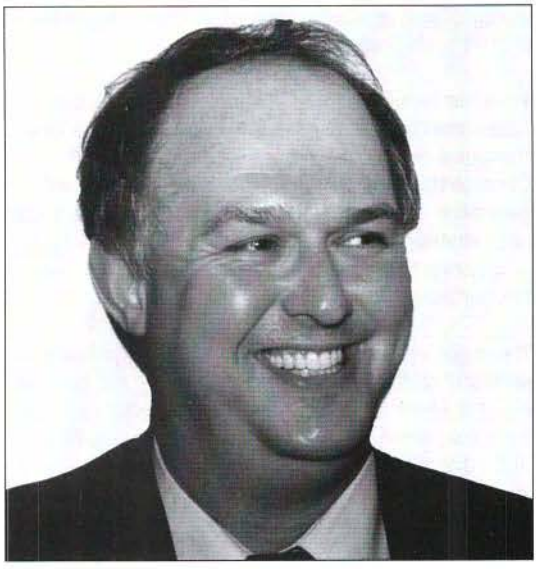
force-fed material merely because it's available, or that he or she browses aimlessly. Interactivity and participation are paramount. To learn more purposefully and, as the Acorn slogan puts it, to learn 'without limits', pupils cannot actually do without technology much of the time. New skills are required.

Acorn has been saying this for some time during the course of the New Literacy debate (see RISC User 8:7, page 11). A classic example would be where pupils of any age design and produce their own multimedia application. They exercise skills of creativity, gathering and presenting information co-operatively, selecting what is valid over spurious material, planning in outline, redrafting, evaluating and merely observing with real discrimination. Many of these skills are of a much higher order (and thus inherently more valuable) than simple memorisation and reproduction of someone else's 'facts'. There is a tendency towards this in some of the darker warehouses of all too many schools IT operators. Yet this distinct and discrete set of skills is exactly what the MediaRange formalises; only secondarily does it attach the right technology to the task. This is its strength.

So, for example, *MediaSurfer* is to be a set-top box allowing 'watching and exploring' (one of a set of Acorn-inspired descriptions of the core skills and tools necessary for a media-centric world) with materials on the Internet and beyond. *MediaSelector* will present CD material via the set-top box, where the learning skills include 'choosing and doing'. *MediaProcessor* sponsors multimedia authoring on an A7000: 'contributing and creating', whilst *MediaMaker* facilitates video capture and editing on a Risc PC: the educational objectives are those of 'devising and developing'. *MediaPad* uses a Pocket Book to 'fetch and carry' information; *MediaStore* shares and delivers files on a SchoolServer. *MediaService* supports the 'arrangement and presentation' of material online via cable or satellite. Lastly, the *MediaCentre* will map out a customised combination of all or some of the above parts; again, to achieve educational objectives with the technology, not the other way around!

MediaMaker: Top of the Media Range.

In summary, Acorn has reclassified, and perhaps even redefined, the skills, attitudes and knowledge necessary for learners of school age (and beyond) at this point in the evolution of curriculum theory; although the principles behind the MediaRange are still very much in line with the National Curriculum. The range is backwards compatible, and ought to be future-proof. Why? Because in large part it closely reflects how we really do learn. Some of these component products are available now; others will become so during the course of this year. Last month, a conference was assembled to begin, amongst other things, the process of representing the strengths of the MediaRange to the educational community. For more details, watch out for future coverage in RISC User and contact Dick Wallin and his team at Acorn: onmedia@acorn.co.uk or 01223 254222.



Photography: Lee Calcraft

Yes, but is it ART?

Lee Calcraft Talks to Peter Bondar, Director of Applied Risc Technologies

Last summer you became the Director of Acorn's newly-formed company, ART. How did this change your life?

It has been tremendously stressful, and tremendously interesting. I worked an average of a 65- or 70-hour week from mid-year onwards. I've put two stone of weight on, lost another inch off the hairline, and nearly got threatened with a divorce before I had even got married!

> ***"I've put two stone of weight on, lost another inch off the hair-line, and nearly got threatened with a divorce before I had even got married!"***

And from a work point of view?

In the old structure I had to spend an awful lot of time trying to persuade people to do things, whereas now because of the demarcation, and because the culture has changed, if it is your job you get on and do it. In the old days you had to get everybody to go and say yes before you could do something.

How much freedom have you got now?

In one sense I've got total freedom, but obviously you apply common sense, and I have to wear my corporate hat: what's good for the company, the group, what's good for our shareholders, what's good for our employees - so in reality that constrains you. But in reality if we wanted to do something and we thought it was the right thing to do, there is nothing stopping us doing that.

The reality is that we want to look after our enthusiasts, we want to look after Acorn Education, we want to look after our employees. By the time you've taken all those factors into consideration, you are constrained, but not in the sense of 'you can't do that' - it's just what's good commercial sense or what's good technical sense, or whatever.

> ***"I have a guy whose sole job is to wander around Europe getting funding from ESPRIT."***

With Acorn split into Acorn Education and ART, you have two companies working out of the same premises. Is there a sense of rivalry developing between you?

My view is that they get on better now than they did before, because the ART guys know what their responsibilities are and what their job is, and they treat Acorn Education as a customer; whereas in the old days it was just 'those guys down the road, they are always wanting things', but because we now exchange money between ourselves we have a discussion and say "it's going to cost you a million pounds. Can you afford it? Do you want it? Is it worth it?". So it is actually a much more practical thing, and the other thing is that on the reverse side they impose penalties on us. If we don't deliver on time we don't get paid or we get a penalty payment, so the attitude is much more professional.

To help us to get a picture of the setup, how many people are there within ART?

As of today there is about 30 of us, compared to the 50 in Education. So they have the logistics, sales, marketing, support, order processing, whereas we have essentially engineering and a couple of people in business development, so what we have is four groups of

engineering staff: an operating system group, a multimedia group, a hardware group and a networking group.

They all report to Chris Stott who's the R & D manager. So I have an R & D engineering group and then on the other side I have the business development activities. I have a guy whose sole job is to wander around Europe getting funding from ESPRIT [the EEC's European strategic programme for research and development in information technology]. We are already in several ESPRIT projects, and that's a way of getting more technology and more development. Then we have an international sales manager who is wandering around primarily the Pacific and Japan and America selling our technology to large corporations out there. And I've got responsibility for the traditional VAR business. I'm just about to recruit somebody to make that more efficient on a full time basis. So I've got a commercial organisation and an R & D organisation.

❝ StrongARM is... going to cause the Risc PC indigestion... ❞

What are your main in-house projects in the R & D wing?

The major things are the ARM 810 and StrongARMs that we are working on for Acorn Education.

Is that two different machines?

It will be, yes. The 810 will become the entry level machine. The StrongARM will appear first of all in today's Risc PC and then we plan at this stage to put it into the CHRP hardware platform [see below] to produce a high-end higher performance device. So for Acorn Education the 810 and StrongARM cards are major projects.

We are doing new versions of OmniClient, and finishing off the Internet and email things that we have already produced, and then the other major activity is more of the SkyNet project. We delivered the PCExchange product, and now we've got the video conferencing software being written, and the timecode software which we shipped a beta out to enthusiasts and software houses to test. And there's some 3D work in the SkyNet project.

Could you tell us a little more about CHRP?

CHRP is interesting for us. There has been a viewpoint that the Intel PC architecture is flawed in a number of aspects - we all know it's built on history and one thing after another. We also know historically that lots of people have made boxes that are a lot better than Intel boxes, with better architectures. But most of them suffer from a lack of volume, so the cost of them is expensive relative to the Intel boxes.

What has happened is that Motorola, IBM and Apple have come together to produce a reference design for a traditional desktop computer which is called CHRP - Common Hardware Reference Platform - it's a second generation of evolution. The idea about this is that it's an open strategy, and will allow a Taiwanese manufacturer or whatever to buy chips and build a box that will have this particular architecture.

The reason why we like this architecture is that it has a number of attributes defined in it as standard that could be of use to Acorn: the concept of a ROM operating system is a key component, a very high performance video system that's dual ported is also supported. The concept of having an alien or heterogeneous processor family is supported; the concept of a multi-processor family is supported.

A lot of these ideas are ideas that are in Risc PC today or we have looked at with things like multiprocessor cards or we had an internal project looking at an internal successor. So rather than effectively trying to design a ground-zero computer with the chip set costs associated with it, our theory and our belief is that by using the CHRP platform we can produce a new computer which takes Risc PC further forward, but without having to spend the level of engineering that we would have had to if we did a ground-zero development. So we can produce a faster product more quickly with less engineering costs, and it also has some extra benefits like: you would be able to put PCI cards into it, you would be able to run other people's operating systems - so it's got a number of attractions to us as well as giving substantially more headroom for StrongARM.

Unfortunately StrongARM didn't exist when we designed the Risc PC so we can see that with StrongARM now coming over the horizon - the first silicon exists now - it's going to cause the Risc PC indigestion to an extent, so we need something that can harness the power of that. CHRP is one way of doing that.

❝ We have had discussions with Apple ... we've also looked at putting a Mac card into a Risc PC. ❞

Are you certain at this stage that CHRP will be the hardware platform that you will use for StrongARM?

We will put StrongARM into Risc PC, and it will offer a very substantial performance improvement over anything that anybody's experienced. But it will still be limited by

the architecture of the Risc PC simply because of the speed. StrongARM will run at 200MHz which is over twice as fast as our wildest dream of anything we ever had. With the 810 we said that if it got to 120MHz it would be doing well....

> ***"We have, for the first time ever, a major global player fully endorsing our technology."***

How fast will the StrongARM go?

We physically haven't had it going. It is still in the hands of Digital Equipment. But they have already had it running at over 100MHz, which for the very first piece of silicon out is pretty fast.

Can you give us a hardware timetable for the 810 and StrongARM machines?

It is likely that the 810s and StrongARMs (with the best of the knowledge we have today) will go into customer machines some time during the summer of this year.

Will these both be Risc PCs?

The 810 will go into the Risc PC 800. What happens with the StrongARM one, we don't know. We know that because the StrongARM has what is called a Harvard architecture (it has two separate caches), illegally written software will not run on the StrongARM. The only way to make it run is to switch off the caches, which cripples the performance, so until we've got the verification software, we know that the 810 will be a very logical succession to the 710 for everybody, but the StrongARM may be like a special case, where you might have to forsake the running of certain applications if you wish to use it. So we don't know whether StrongARM will be shipped with the Risc PC as a finished product or whether StrongARM will be shipped as a card to add to your Risc PC.

Can we expect to see a StrongARM-native machine in 1997?

Yes, we would hope to show it by the end of '96 in prototype format, and again there is an engineering logicality that leads us to the StrongARM card for Risc PC through CHRP, so there is not a reinvention of the wheel. The work we do for that will lead logically, and so we are trying to charter a route that makes best use of our engineering. We hope by the end of '96 to show a StrongARM in a CHRP box. That is certainly the intention.

I read in an Apple magazine that Acorn might become a supplier of Apple Mac clones. Is there any truth in this?

The following things are certainly true:

Olivetti, which is our majority shareholder has signed a licence for access to Mac OS, and Acorn, as a result of that, has access to that technology.

It is also true that because of our interest in CHRP that we have had discussions with Apple about using Apple's forthcoming CHRP box in that way, and we've also (with people like Aleph One and FTDI) looked at putting a Mac card into a Risc PC.

Will that happen?

At the moment I cannot announce any of those, but it is true that we've looked at all those options... One of the critical aspects from an Apple perspective for most of these things is that their current operating system (System 7) does not lend itself easily to cooperating with RISC OS, whereas their forthcoming operating system, Copland (System 8), has the necessary hooks and handles to allow RISC OS and it to interface and cooperate - so my personal viewpoint is that if it is going to arrive in one of those formats, it will only arrive once Copland is available - this is 1997 at the earliest.

> ***"The Oracle deal ... will more than double our engineering resources"***

CHRP may therefore overtake all of this?

Yes, they [the options] are all shades of grey, and they all overlap to a greater or a lesser extent, but there are similarities...and any one of these permutations may happen because clearly the technologies are all overlapping. But the major aspect is that there isn't at this stage a compelling reason to put a Mac card into a Risc PC, whereas a PC card in a Risc PC gives you access to a whole pile of new software. Incrementally, putting the Mac card in doesn't give you that many extra titles, and today a lot of the titles are very closely welded to the Apple hardware - a bit like we were one or two years ago.

There was a press release today about a NetSurfer box. Can you tell us about the background to this?

The essential part of that is that Oracle are involved in a fairly strategic battle with Microsoft - this would be a public view - and wish to unseat Microsoft from an exclusive and pre-eminent position in the market. One of their viewpoints is that with the rapid increase in networking, both on Internet-related and broad-band and satellite transmission, this idea of a more distributed networking environment is a view forward.

What has happened as a result of our restructuring that took place in '95 is that we essentially said that we

would licence all our technologies freely to whoever was interested in these things. As a result of that, a number of people have been in contact with us. What Oracle have decided to do, having had a look at the A7000, the set-top box and some of the other things that we have in the lab, they have reached a decision that this technology could form the foundation of a set of boxes to help in their strategy.

The basic idea is that we will be furnishing them with a hardware platform, core operating system and core technologies, and they will then put a series of multimedia object brokers and back-end servers, and together offer this as part of a total Internet solution. From an Acorn Group perspective this is absolutely fabulous news because we have, for the first time ever, a major global player fully endorsing our technology. I can't disclose the commercial arrangements, but suffice to say that it is a very substantial commercial relationship, and will more than double our engineering resources, and because we will still be able to pursue our own activities, the technologies being developed there will be available back through the Acorn community, so it is very much for Acorn a win-win situation.

> ***"What we are doing is typically selling technology or a solution to a company who then wishes to spring a surprise on the market."***

Will the NetSurfer be running RISC OS?

Certainly the ones we will be demonstrating in February and March will be RISC OS based. One of the great opportunities is that, as you know, Acorn's never been short of bright ideas, but has not necessarily had the funding to put these bright ideas into being. This relationship with Oracle is very much a two-way thing. It allows us to present to them ideas and technologies, and for them to adopt them. They've already seen some of our technologies, and they like what they see, but we've also got a whole pile of new ideas, which for a whole pile of reasons has not been discussed with them yet, but as part of this collaboration we will be presenting these ideas.

My view is that a number of these ideas that previously Acorn could not have afforded to pursue will now get pursued, and that technology then will filter back into ART, Acorn Education and OM (Online Media). Personally I think that this is one of the most fabulous things that's happened to Acorn in the entire time I've been there.

Are there other areas where you are trying to hook up deals in this way?

Yes, very much so. Under the ART banner we've already got four deals within the first six months of our existence... We are currently working on projects for Japanese companies, for Korean companies, and for European and UK companies. And now with Oracle we have one in America as well.

> ***"More things have happened in six months here at Acorn than in the previous five years."***

So all this will feed very positively into Acorn's finances?

Yes, though given the fact that licencing money is typically of a lower value, but a higher margin than boxes, it will take time to filter through. But you can see from the share price movement this morning that the people who understand the financial systems can see what the opportunities are. It's win-win because obviously ARM will benefit because more ARM chips will get sold, so we're very pleased about it. This is the result of several months' hard work by a whole pile of people chasing this contract, and the fact that it's come in on the first day of BETT is highly relevant and very good timing.

It's good to hear you so upbeat about ART and Acorn. Where do you think you will be in a year's time?

In a year's time, especially with things like the Oracle deal, and some others that will be announced in the next few months (we have several other things in the pipeline - which is very positive). In a year's time I hope we will be back into the 'good times are back again' type thing. We had a very stressful year in '95, and had to do some very unfortunate and unpleasant things with restructuring. I personally did not enjoy doing those things, but we had to take some dramatic action and that dramatic action has been vindicated by what's happened.

I believe that we will have a whole portfolio of new customers in new areas. By then we'll have some new technologies on stream which we'll be able to talk about. We are working with some very interesting technologies, again in confidence, but by '97 they will become public because they will have arrived, and most of these allow us to license them to other people, and to put those technologies back into the Acorn community. So my viewpoint is that Acorn will be significantly stronger at the end of '96 than it was at the beginning, and that we will continue to survive and prosper. But we will change and evolve - as you can see, more things have happened in six months here at Acorn than in the previous five years, and the rate of change in evolution will carry on.

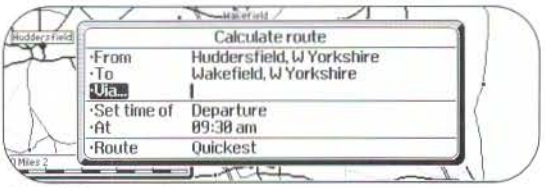
Software in your Pocket

Microsoft AutoRoute Express

Richard Hallas squints at a 125 by 40mm map of Great Britain, and tries out a few games for the Pocket Book II

An Acorn Pocket Book is an ideal computer to take with you on your travels, given its extremely compact size. What better application, then, could you have for such a computer than a route-finder to tell you how to make a particular journey? Microsoft has rewritten its popular PC package for the Psion Series 3a (of which the Pocket Book II is, of course, a rebadged version) for just this purpose.

AutoRoute Express comes on a 1Mb Solid State Disc (SSD), and is only suitable for Pocket Book IIs with at least 512K of RAM; it can require up to around 175K free to calculate a route from one end of the country to the other. If you run low on memory, though, it may be possible to use the program to work out a journey in stages.



Calculating a route.

Taking a flexible view

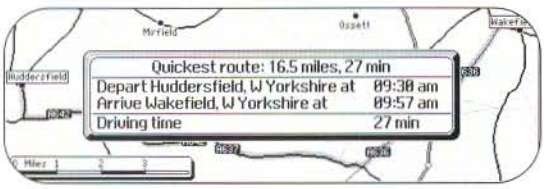
The program has a good level of detail of the British Isles in the form of all major roads, cities and towns, along with many small towns. Villages are generally not included, though. The program lets you zoom the view in or out, or you can define a rectangle and fit the view to that. A scale is provided, which can be moved or hidden. From an overview of the entire British Isles, you can zoom in to a point where the scale reads just 0.1 miles; and the closer in you get, the more detail appears in terms of place and road names (the latter consisting of motorways, A-roads and B-roads, but not smaller streets).

It is possible to move around the map by panning or jumping in steps, and you can define up to 27 locations on the map and move to them instantly with a keypress. Altogether, it's surprisingly easy to get around. I had feared that the relatively low resolution of the Pocket Book's screen would be a hindrance, but the zoom options make such considerations relatively minor. It does take a noticeable time for the screen to redraw, but luckily it is not necessary to wait for this to finish before the view can be moved.

The scenic route

When it comes to planning a route, you can set up a home town which the software will assume is the starting-point of your journey unless you tell it otherwise. In the simplest case, therefore, all you have to tell the software is your destination. However, you can also set either your departure time or your planned arrival time, and the program will calculate the time needed for the trip. As well as start- and end-points, your journey can be made via up to four additional places, and you can tell the program how long you plan to stop at each. Place names can be quite imprecise; the program will find the nearest matches to what you typed, and present a list of alternatives.

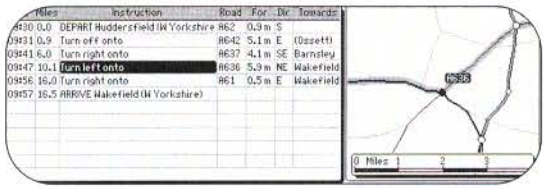
The program will calculate either the quickest route, the shortest route or your preferred route. The latter option allows you to influence the program's choice of roads by stating how much you would like to travel on, or avoid travelling on, motorways, A-roads, B-roads, changes of road, and ferries. The average speed for various types of road can be set individually so that the program can be quite accurate about estimating journey times. If you know of roadworks, or have any other reason for wanting to avoid a particular section of road, you can even mark roads so that the program will not use them. Finally, the program is also able to work out the cost of the journey.


Quickest route: 16.5 miles, 27 min
Depart Huddersfield, W Yorkshire at 09:30 am
Arrive Wakefield, W Yorkshire at 09:57 am
Driving time 27 min

The resulting route, with summary.

Once the details have been entered, the route is calculated (the quickest route from Land's End to John O'Groats took just over a minute to appear). A summary window showing arrival and departure times, driving time and distance is shown, and the map is redrawn to fit the entire route onto the screen, with the relevant roads outlined in grey. AutoRoute Express provides map, table and mixed displays, and at this point it is useful to switch to the table view, as this gives a summary of your journey in multiple steps, with a new line for each change of

road. You are told, at each stage, what the time is and what road you are on, how far you should be travelling along it, and your current direction, in addition to a precise instruction telling you when to turn. Switching to the mixed view gives reduced-size views of both map and table on the screen at once, and as you highlight different rows in the table, the map changes position. If you have a printer attached, you can print out your journey plan table; or you can export it into Write and transfer the information to your desktop computer.


Miles Instruction Road For... Dir. Towards
0.0 DEPART Huddersfield (W Yorkshire) A62 0.9 m S
0.9 Turn off onto A642 5.1 m E (Ossett)
6.0 Turn right onto A637 4.1 m SE Barnsley
10.1 Turn left onto A636 5.9 m NE Wakefield
16.0 Turn right onto A61 0.5 m E Wakefield
16.5 ARRIVE Wakefield (W Yorkshire)
0 Miles 1 2 3

Following the route in the split table/map view.

Conclusions

The route shown in the screenshots is one that I take very frequently, and AutoRoute Express calculated the correct distance, though its time estimation was what I would call 'ideal' rather than 'realistic'; the program cannot take into account the hold-ups caused by other drivers! Altogether, AutoRoute Express is powerful but easy to use, and should prove invaluable when venturing into unknown territory. Thoroughly recommended.

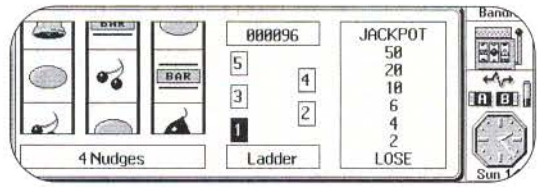
Product	***Microsoft AutoRoute Express***
Supplier	***Psion PLC***
	Alexander House
	85 Frampton Street
	London NW8 8NQ
	Tel. 0171 262 5580
	Fax 0171 258 7340
Price	***£59.50 ex. VAT*** *available from BEEBUG*

Widget Games 3a

Widget Software, a well-known name in Psion circles, has released a new compendium of seven games. Supplied on a 128K SSD, they are suitable for Pocket Book II only.

Bandit

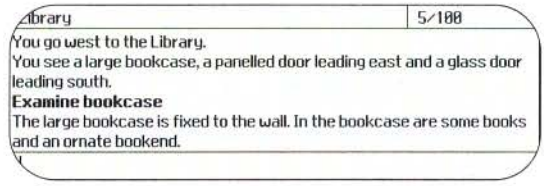
Bandit is a version of the fruit machines to be found littering up our seaside resorts. It has three reels, a bonus score ladder, and hold and nudge facilities. When the reels stop at a winning combination, you can either collect your winnings or gamble. This involves pressing Space at an appropriate time to stop a flashing highlight which toggles between higher and lower winnings. This is a good idea, but is a little difficult to time accurately



because of the update lag in the Pocket Book's display. Altogether, this is quite a good fruit machine implementation with a decent range of features. I do find that computer versions of fruit machines get boring quite quickly, though, for the simple reason that you can't actually win anything!

Castle

Castle is a traditional text adventure which accepts commands as English sentences. The objective is to escape from a castle, collecting treasures along the way. The initial part does seem to consist, in fairly large measure, of examining things and finding keys or other objects inside, but there are more interesting puzzles later on. The adventure's map is well-organised and easy


Library
5/100
You go west to the Library.
You see a large bookcase, a panelled door leading east and a glass door leading south.
Examine bookcase
The large bookcase is fixed to the wall. In the bookcase are some books and an ornate bookend.

to visualise, and it may turn out to be quite an interesting adventure overall. My only real gripes are that the descriptions, whilst well-written, are rather short, and there is no abbreviation for the command 'Examine'. Any reduction of the need to type extensively on the Pocket Book's tiny keyboard would have been welcome!

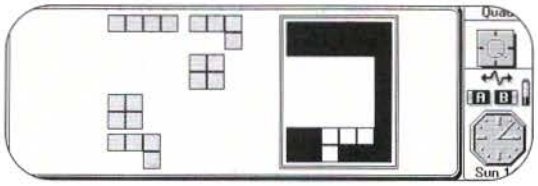
Poker

Computer implementations of Poker (and similar games) always seem a little uninteresting to me because half the fun comes from judging whether your opponent is bluffing or not! Also, playing for computer points rather than real money is not terribly motivating. Having said

that, if you do want to play Poker against a computer, then this is a perfectly good version! The cards are large and attractive, and you can gamble away to your heart's content.

Quad

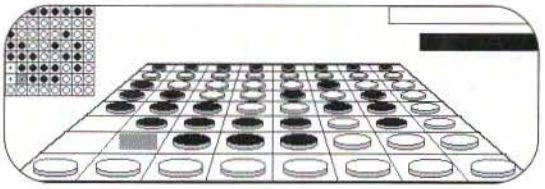
Quad is a puzzle game in which you must rotate and move a variety of pieces, made up of arrangements of four squares, to fit them into a rectangular board. The first few boards have some pieces placed already to help you, but as you progress, the boards increase in difficulty and the variety of pieces increases. Altogether there are



40 different puzzles, and you can play them sequentially or pick and choose. Quad is a good game for exercising the brain cells, although I found the control method initially a little awkward.

Reversi

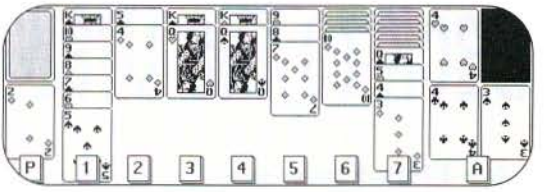
Also known as *Othello*, Reversi is a popular board game to be found on computers, and this is an extremely good implementation of it. Unusually, the board is displayed in three dimensions, though a two-dimensional overview is also displayed at a small size. There are four skill levels: beginner, novice, expert and genius, and on the hardest level the computer plays a very strong game. There are various options, such as the ability to display all possible moves on the 2D overview. It's possible to cheat by taking back moves, and even to show a replay of a full game. The graphics are very nice, and are only let down by the use of a rectangular 2D cursor on the 3D



board. I would have liked an option to switch between the 3D board and a large 2D version, and it's a pity that there's no two-player option. Otherwise, it's a very good implementation.

Solo

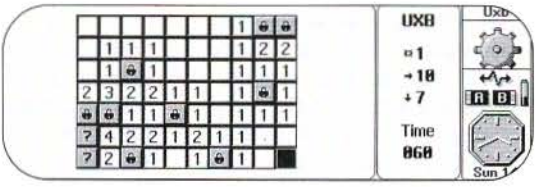
This is a version of Klondike Patience. Cards from the pack are dealt in threes, though a cheat function allows you to deal just one card. The graphics are very attractive, though empty piles, represented by solid black rectangles, look rather ugly. Unfortunately there is no way of moving a few cards simultaneously from one stack to another. This is only rarely necessary, but it



should be possible. I was also a little disappointed that you cannot go back to the start of a game to try again with the same deal; choosing 'restart' from the menu deals a new set of cards. Apart from these minor criticisms, Solo is nicely presented and easy to play.

UXB

Every computer should have a good Minesweeper variant! A grid of squares is presented on the screen, and several unexploded bombs (UXBs) are placed in random positions. As you click on squares, they turn over to reveal whether they are empty, and to show by means of a number whether there are any bombs in adjacent squares. You must deduce which squares contain bombs and turn over



all the others. The maximum size of board you can use is just 16 by 16 squares, which is a little small for seasoned players, though the screen size is a limiting factor here (it scrolls vertically if necessary). The number of bombs must be set explicitly rather than as a more helpful percentage of the board size; and there is a timer, but no record of the best times achieved. Despite minor shortcomings, UXB is a fun game which stimulates logical thought.

Product	***Widget Games 3a***
Supplier	***Widget Software Ltd***
	121 London Road, Knebworth
	Herts SG3 6EX
	Tel. 01438 815444
	Fax 01438 815222
Price	***£34 ex. VAT + £1.95 p&p***

Conclusions

These games (all written by the same author) are basically very good, and should provide lasting interest. A few could be improved slightly, but on the whole there isn't much to criticise. All have loud and uninteresting sound effects, but these can, thankfully, be turned off; and, unusually, all the games (except Castle) can be configured for French language as well as English.

Back to the Drawing Board

Alan Highet assesses Davyn's RiscCAD

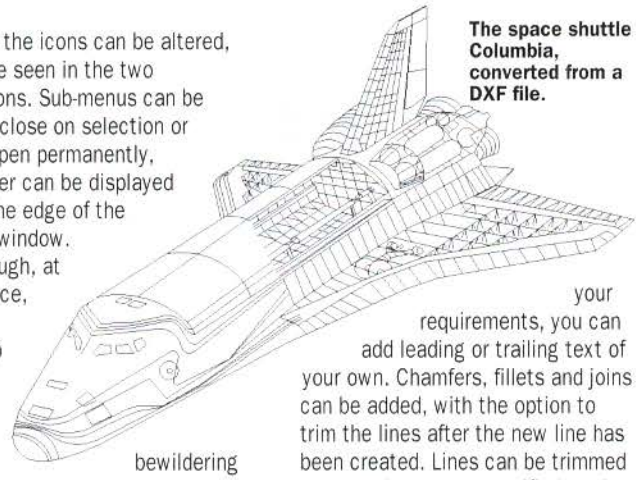
RiscCAD is a conventional 2D CAD program which allows the construction of various forms of technical drawing and their subsequent output to a printer or plotter. The software will run on any Acorn 32-bit computer with a minimum of 2Mb of memory and RISC OS 3.10 or higher. It will run from floppy disc but, as usual nowadays, a hard disc is recommended. The program fits onto a single floppy and is accompanied by an examples disc and a utilities disc, all packaged together in a hard plastic sleeve enclosing the A5 ring-bound manual.

RiscCAD installs on the icon bar in the usual manner, and a single click with Select will open a default layout, while Menu gives access to global preferences and Adjust opens the library directory. Most of the default options can be customised, but the main tool window at the top remains the same, with a large text slot showing the currently-selected tool option and a smaller text slot showing which snap option has been chosen. Below these are icons for saving, zooming, printing, layer editing, hiding objects, line styles, grid display, cut to clipboard, copy to clipboard, paste from clipboard and library access. There is also a further text slot showing the current layer selected and a drop-down layer selector.

Also opened initially with the default document are two toolboxes containing icons which control the various drawing options and the selection of snaps. These, like the main header, can be positioned anywhere on the screen and the layout of the icons can be altered, as can be seen in the two illustrations. Sub-menus can be made to close on selection or remain open permanently, and a ruler can be displayed around the edge of the drawing window.

Although, at first glance, there seems to be a bewildering array of icons, they soon start to make sense, and little reference to the manual is required. The basic drawing tools are point, line, circle and arc, and each of these then leads to further options which give greater control over the way the individual tools may be used. For instance, the point tool lets you place a point midway between two objects or at the intersection of two lines, two circles or a line and a circle. The line tool can draw perpendicular lines, tangents, parallel lines, squares and polygons. Circles and arcs can be defined by any dimension or by snapping to any objects already in place. Lines, arcs and circles can also be divided equally by any number to aid in the construction of rotated or repeated objects.

Text can be added, but outline fonts are not used because of the problems associated with reproducing Bezier curves on plotters. The text can be at any size and angle, and can be stretched and rotated on the drawing before placement. Auto-dimensioning is provided, in a huge range of differing styles; but, if the styles don't cover your requirements, you can add leading or trailing text of your own. Chamfers, fillets and joins can be added, with the option to trim the lines after the new line has been created. Lines can be trimmed to any point or to a specific length, and circles and lines may be broken at any point. An object can be stretched in one dimension, and any object may be selected for editing, but you are only able to move the object or delete it, not alter individual elements.

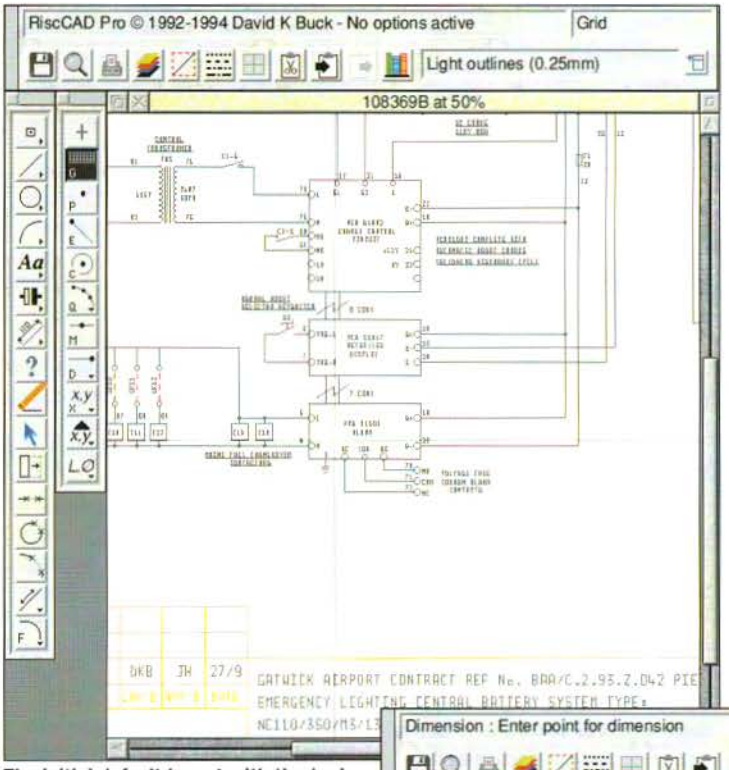


The space shuttle Columbia, converted from a DXF file.

A dimension can be queried at any time, or details provided about the size and position of an object. Add to all this the ability to specify 32 different layers, draw to scale, import and export industry-standard DXF files, import drawfiles, use multiple libraries and many other facilities, and you have a very well-specified product. So, with the impressive list of features now dealt with, how well does it perform?

Putting mouse to screen

RiscCAD is not a new product, and when I first saw it over a year ago I was very taken with it, but resisted the temptation to buy until it had more of what I wanted. In the company I work for we still use feet and inches for our drawings, and this is therefore a requirement for any CAD package being considered, as is the ability to scale the drawing


RiscCAD Pro © 1992-1994 David K Buck - No options active
Grid
Light outlines (0.25mm)
108369B at 50%
GATWICK AIRPORT CONTRACT REF No. BAA/C.2.93.2.042 PIE
EMERGENCY LIGHTING CENTRAL BATTERY SYSTEM TYPE:

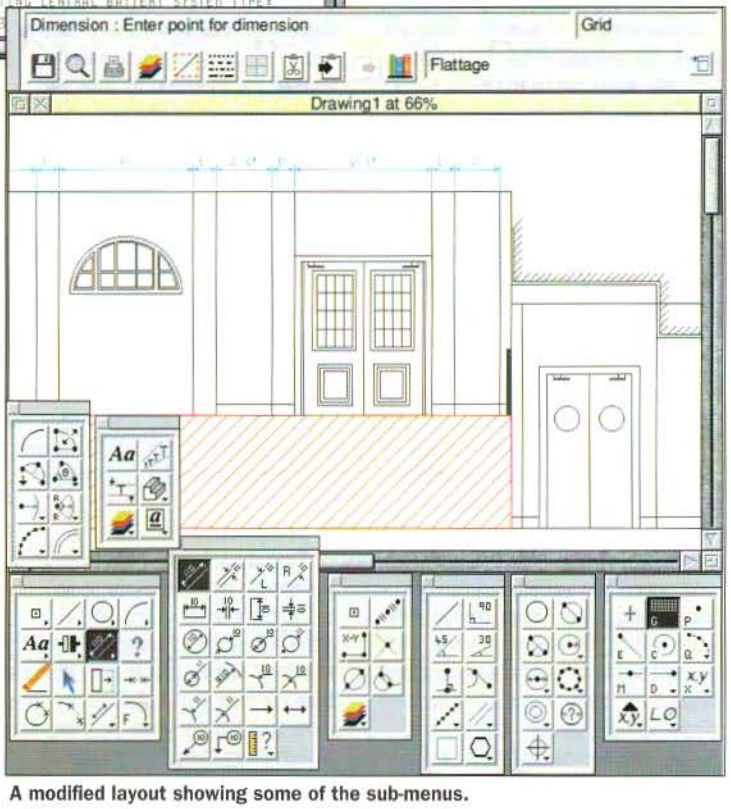
The initial default layout with the tools and snap toolboxes.

while retaining all measurements at full size. Although we use imperial measurements, we normally use the scales of 1:50 and 1:20, which are traditionally more associated with metric. RiscCAD copes admirably with these requirements although, like a lot of packages, it doesn't use feet and inches but only inches or feet with the remainder being shown as a decimal. However, being able to add text to a dimension means I can, at least, enter the required dimensions manually, although 1/4, 1/2 and 3/4 are not accepted.

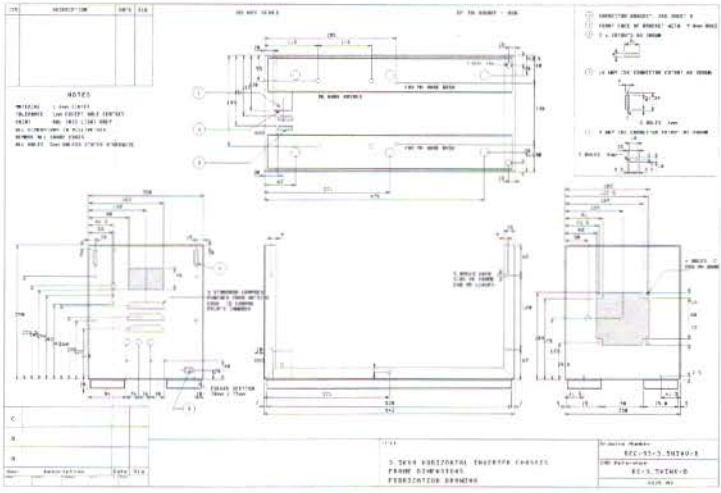
Layers can be given meaningful names and, with some initial planning, a very ordered drawing can be constructed, allowing details such as the different levels of a house to be placed on separate layers. Each layer can have any one of sixteen colours assigned to it to aid in identification, as well as any one of six line styles. Then it is just a case of picking a starting point, selecting an object type to draw with and putting pen to paper; or mouse to screen, as it is in this case!

Every effort seems to have been made to help you in the placement of lines or objects, both with the various snaps available and also with the ability to specify a point in absolute terms or relative to the last point. This even includes polar coordinates, allowing you to specify angle as well as distance.

A library is provided which contains a large collection of Ordnance Survey map symbols, electrical and electronic components, and various electromechanical connections. Any object can be added, allowing the construction of your own library files, and objects can have a reference point saved with them to aid positioning on import.



A modified layout showing some of the sub-menus.



Output from RiscCAD.

Minor criticisms

One or two little things went wrong during my use of the product, but none of these were serious and I never lost any information. Various options are available on the function keys, but instead of the functions actually assigned to the keys, I would like to see the various snaps selectable from a single keypress. They are accessible from a combination of the Insert key and a letter key, but this means releasing the mouse (or having a very long finger span!). The other addition I would like is for the toolbox and window positions to be saved with the drawing.

Single line hatching at any angle is the only fill option, and it works reasonably well but doesn't always fill the space completely on some of the more complicated shapes. However, the hatching is only a group of single lines so these can be ungrouped and edited to finish the job. Printing is achieved through the normal RISC OS printer drivers, but for more control over positioning and line size it is worth exporting to Draw, where you can alter the line width, add outline text or fill any outline shapes.

Support utilities

The import and export of DXF files is handled by a separate utility, into which you drag one file and then drag out the conversion. A similar utility deals with Draw import, with outline text being converted to unfilled shapes, but to export to Draw you need to convert to DXF first and then import into Draw which will accept it with some limitations.

Plotting is also handled by a separate utility, which is a fully programmable driver. It is supplied with a number of scripts for the more popular plotters, but can be programmed not only to work with other plotters, but also to produce text files. For instance, there is a script file to produce CSV output as well as a lister script which literally lists every line and its coordinates.

In perspective

How does RiscCAD measure up to the opposition? There can be no better comparison than with AutoCAD, which is accepted 'industry standard' software. It is fairly obvious from the start that AutoCAD is a far more powerful package, as it includes almost every conceivable drawing tool as well as 3D solid modelling, rendering, animation and much, much more. But so it should, as it requires a high-end 486 or Pentium PC with a minimum of 16Mb of RAM and 35Mb of disc space, as well as commanding a price tag of over £3000.

A slightly fairer comparison would be with AutoCAD LT which, as the name suggests, is a cut-down version of AutoCAD. This is again a very well-specified product; admittedly it has more of most things, but the extras are not always needed by most users, and appear to have been added to suit the modern PC user's need for more bells and whistles rather than improved productivity. In fact, most of the extras not included in RiscCAD could easily be covered by using Draw or any art package. AutoCAD LT also requires almost as powerful PC as its bigger brother, and has a price tag of £350.

RiscCAD	
Supplier	*Davyn Computers* *The Workshop* *off Princess Street* *Sandal, Wakefield* *West Yorkshire WF1 5NY* *Tel. 01924 254800* *Fax 01924 258036*
Price	*£191.52 inc. VAT & p&p*

Conclusion

Overall, RiscCAD is well-constructed and robust. It is continually being developed and is fully supported by the author, who can be reached at Davyn Computers most Thursday evenings, and he is always open to suggestions for improvements (try ringing the author of AutoCAD and asking him to change something!). In fact, you can be sure of a friendly welcome at any time during working hours, but don't expect a short call as you'll probably end up discussing the future of Acorn at the very least!

Marks out of 100? Well, I think 95!

Just a Page

This month we present another attractive graphical offering from R. A. Swetman

Facets is a short Basic program which creates random symmetrical patterns rather similar in style to those of the *Weaver* program from the November issue. This time, however, some trigonometry is employed to make rather interesting rotational patterns. Like *Weaver*, *Facets* could inspire you to make your own designs, or just provide a moment's relaxation from work.

Type in the listing carefully and save it under the filename *Facets*. Running the program will clear the screen and produce the first kaleidoscopic pattern. A new pattern will be displayed every couple of seconds, but you can change the delay by editing the value of 200 in line 300 to the number of centiseconds delay you require. If you see a pattern you particularly like, tapping on the keyboard will save it as a sprite into the currently selected directory, under the filenames Facets1, Facets2 and so on. If you wish to supply a pathname for the saved images, you can do so by editing line 550.

Listing 1

```
   10 REM            >Facets
   20 REM Author     R.A.Swetman
   30 REM Version    1.00
   40 REM RISC User Jan/Feb 1996
   50 REM Program    Subject to copyright
   60 REM            Not Public Domain
   70 :
   80 MODE 15:OFF
   90 ON ERROR:ORIGIN 0,0:ON:END
  100 S%=1:DIM P%(500),Q%(500)
  110 Z=RND(-TIME):PROC_Random
  120 REPEAT:PROC_Facets:UNTIL0
  130 END
  140 :
  150 DEF PROC_Facets
  160 PROC_Stars
  170 FOR K%=1 TO 10
  180   PROC_Colours
  190   U%=2*(2+RND(3)):A%=U%*RND(16)
  200   N%=RND(4):H%=100+RND(540):V%=100
+RND(400)
  210   D=RAD(A%):C=COS(D):S=SIN(D):P=H%
/V%:S1=S*P:S2=S/P
  220   X=0:Y=V%:MOVE X,Y
  230   T=X:X=X*C-Y*S1:Y=Y*C+T*S2:MOVE X
,Y
  240   M%=5-80*(RND(2)=1):J%=0
  250   REPEAT
  260     T=X:X=X*C-Y*S1:Y=Y*C+T*S2
  270     IF (N%=1 AND M%=85) THEN MOVE
0,0
  280     PLOT M%,X,Y:J%+=1
  290   UNTIL ((J%*A%) MOD 360)=0
  300 NEXT:Z=INKEY(200)
  310 IF INKEY(-82) THEN PROC_Save
  320 CLS
  330 ENDPROC
  340 :
  350 DEF PROC_Random
  360 ORIGIN 640,512:FOR I%=1 TO 500
  370   P%(I%)=640-RND(1280):Q%(I%)=512-
RND(1024)
  380 NEXT
  390 ENDPROC
  400 :
  410 DEF PROC_Stars
  420 GCOL 63 TINT 192
  430 FOR I%=1 TO 500:POINT P%(I%),Q%(I%
):NEXT
  440 ENDPROC
  450 :
  460 DEF PROC_Colours
  470 L%=3-(RND(4)>3):IF RND(4)=1 L%=L%+
16*RND(4)
  480 R%=RND(15):G%=RND(15):B%=RND(15)
  490 red%=((R%<4)+R%)<8:green%=((G%<
4)+G%)<16
  500 blue%=((B%<4)+B%)<24:C%=blue%+gr
een%+red%
  510 SYS "ColourTrans_SetGCOL",C%,,,256
,L%
  520 ENDPROC
  530 :
  540 DEF PROC_Save
  550 OSCLI "ScreenSave Facets"+STR$S%
  560 S%+=1
  570 ENDPROC
```

Talking TextEase

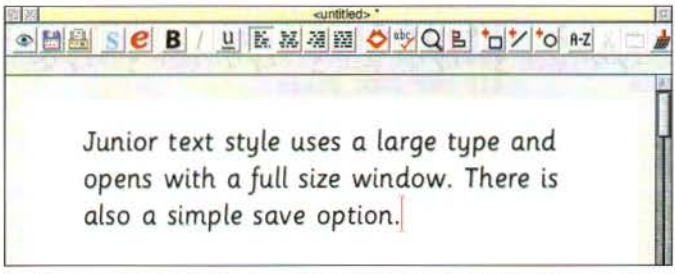
Peter Jennings looks at and listens to the latest version of a DTP program with a difference

TextEase has always been a word processor and desktop publishing program with a style and personality of its own. The first version (reviewed in RISC User 8:4) attracted attention because of its remarkably low price of £29.50 inclusive. There were a few desirable features missing at first, but these were added in a quick succession of upgrades which were supplied to existing users free of charge, except for an optional spelling checker.

positions on the bar be changed if desired. Even the 52-page User Guide has a style of its own, being in landscape format with its comb-binding at the top. The guide, which includes two tutorials, is well illustrated on every page and now has an index, which earlier manuals lacked. Also supplied are a couple of fonts, some graphics, a selection of label templates in different sizes, and pages for a 1996 calendar diary.

Spinning words

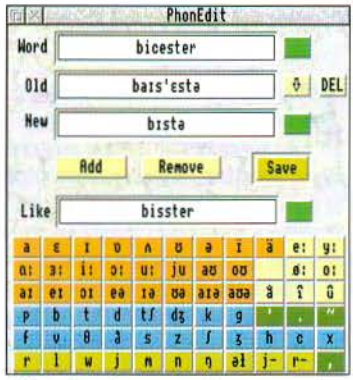
Perhaps the most striking new feature of version two is its ability to rotate text and pictures, and the ease with which it does so. TextEase is object-based, which means that new blocks of text can be started anywhere on the page by positioning the arrow and clicking.



TextEase can be made even easier for young children by using a *Junior* text style with large type and a simplified way of saving.

Both version two of TextEase and Talking TextEase cost more, but are still well below the price of similar packages. They come with a bright new look, beginning with a colourful chocolate box format packaging. The old 'TE' icon has been replaced with a more conventional scroll, and the button bar has gained a few more icons, each of which has its use explained on the bar's information line when the pointer is over it. Individual buttons can be removed or their

Selecting a block of text or a graphic, by double-clicking, encloses it in a dotted red box with squares at the corners for dragging the object to a new size or shape. Inside the box there is a 'tag': a small green square with a short line attached. Dragging this rotates the text or graphic in 15 degree steps, or in single degrees if <Ctrl> is held down. Rotated text can be edited as normal, and it is quite odd, at first, to see the caret rotated to the same angle as the words!



Using the phoneme editor to teach TextEase to pronounce Bicester like 'bisster'. It puts the new version into phonetics for the exceptions dictionary.

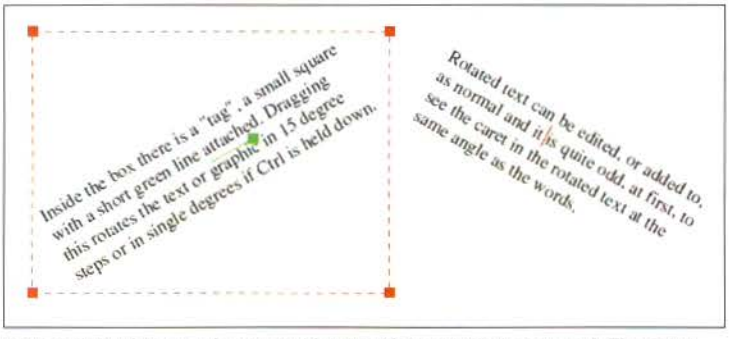
Among the new icons on the button bar are a magnifying glass, to zoom in and out for detailed work and to toggle the scale, and one to open the spell check window. A circle/ellipse drawing tool has been added to the rectangle and line tools. Lines can now be given arrow ends, with a choice of three different shapes.

Another major addition to the button bar is a word bank. Users can make up their own selection of words, phrases or sentences to appear in the word bank window, and clicking on an entry will insert it at the caret. Another icon can be added for a picture bank, which performs a similar function for graphics, allowing them to be dragged onto a page. Object linking and embedding (OLE) allows an illustration to be loaded into Paint or Draw for editing, by double-clicking with <Ctrl> held down, and automatically updates it on the page when it is saved. This can also be used with TableMate, TableCalc and DiagramIt.

TextEase is very easy to use, but can be made even simpler for younger children by selecting the *Junior* text style option. This uses a large type and opens with a full size

window. It has a simple save option which presets a directory where the work can be saved, needing only the child's name in the save box.

Among some of the notable features continued from earlier versions are the spelling checker (now supplied as standard), which highlights doubtful words and has an optional bleep, the ability to make blocks of text non-printable (useful for adding notes and personal reminders), multi-coloured text, shadows, frames and a layout window with diagram buttons for the easy alignment of blocks of text or graphics, which can also be made equally sized and/or equally spaced. Banners and posters, up to nine metres square, can be printed in sections, with marks to show the overlaps.

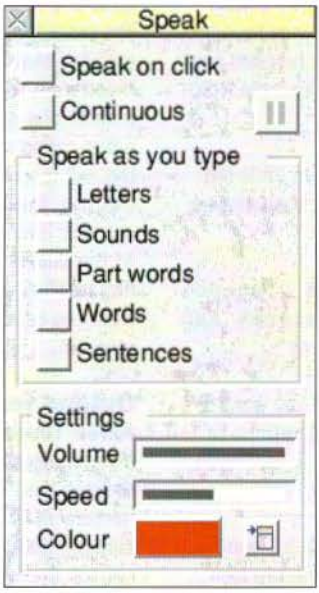

Inside the box there is a "tag", a small square with a short green line attached. Dragging this rotates the text or graphic in 15 degree steps or in single degrees if Ctrl is held down.
Rotated text can be edited, or added to, as normal and it is quite odd, at first, to see the caret in the rotated text at the same angle as the words.

Text and graphics can be rotated by dragging a green tag around. The caret rotates with the text, which can be edited as normal.

Grammar-phone

Talking TextEase has all the features of version two with an additional icon, depicting a pair of lips, on the button bar. Clicking on this will read everything on the page from the word at the caret, each word highlighted as it is spoken. This is just the initial setting; a *Speak* options window gives a choice of volume, speed and highlight colour, and allows the user to decide what is spoken and when. *Speak on click* allows a single word to be spoken by clicking on it, or you can drive yourself mad by choosing continuous speech, which keeps going back to the start to repeat everything again! *Speak as you type* allows several more choices: speaking each letter or pronouncing its sound as it is typed, speaking part words as each new letter is added, or waiting for whole words or sentences to be completed. Two or three of these options can be selected together. Pressing <F1> reads the information line aloud.

A separate phoneme editor allows words with unusual pronunciations to be added to an exceptions dictionary, and this can be used to customise for regional variations of words, such as "bath", where the vowel can be long or short. The editor uses the International Phonetic Alphabet, but should you not be too familiar with this (and who is?) you can enter your own 'sounds like' version and the program will convert it to the IPA equivalent.



The *Speak* options window allows you to choose what Talking TextEase will say.

The talking feature has obvious uses in schools and for the partially-sighted or blind user, and it can usefully be combined with the spelling checker for proof-reading. It can be treated as a program in its own right (and is sold as such by its author), as any text file can be dragged onto a TextEase page to be spoken. The voice is rather like a Dalek's, but one who has had some elocution lessons and is doing his best to sound human; but what happened to the clear tones of newsreader Kenneth Kendal who spoke to us all those years ago from Acorn's BBC computers?

Product:
TextEase version 2 & Talking TextEase

Supplier	*Softease Limited* *The Old Courthouse* *St Peter's Church Yard* *Derby DE1 1NN* *Tel. 01332 204911* *Fax 01684 772922*
Email	*sales@softease.demon.co.uk*
Price	*TextEase version 2: £49 ex. VAT* *Talking Textease: £65 ex. VAT*

The verdict

Higher-priced DTP programs, aimed at users with more professional requirements, will give you some extra features, such as a bigger variety of text styles, hyphenation and rulers, if you want them, but TextEase has always been able to do much more than might be expected from a program in its price range, and version two and Talking TextEase continue to make it a very good buy which will easily cope with most home and educational needs.

HINTS & TIPS

Keep sending us your hints and tips. We will give a free RISC User disc of your choice for each item that we publish.

Icon bar problems

Aaron Timbrell

If you have lots of windows open on the desktop, the icon bar can easily get covered. <Shift-F12> will toggle its position between the front and the back of the window stack, but you can avoid the icon bar getting covered in the first place by holding down <Shift> when clicking on a window's toggle tool to open it to full size. Instead of the window covering the whole screen, it will leave a space at the bottom for the icon bar. (This does not apply to RISC OS 2.)

More about covering the icon bar

Richard Hallas

The previous hint describes the 'normal' RISC OS behaviour, but if you have a machine fitted with RISC OS 3.5 or later (i.e. a Risc PC or an A7000), you can make windows leave the icon bar uncovered by default when you toggle them to full size. This is achieved by setting the *Never obscure icon bar* bit in the machine's CMOS RAM. Unfortunately, there is no convenient way to configure this unless you use the *ConfigExt* program from this month's magazine disc, or *CMOS Edit* from the RISC User 8:5 disc.

The bit which needs to be set is bit 4 of word 28 in the CMOS RAM, and you can alter it by running the following Basic program:

```
    10 Set=TRUE
    20 SYS "OS_Byte",161,28 TO ,,state%
    30 SYS "OS_Byte",162,28,(state% AND
(NOT (1<<4))) EOR (ABS(Set)<<4)
```

The program as listed will set the bit; but if you want to clear the bit (so that the RISC OS behaviour returns to normal), amend line 10 to read:

```
    10 Set=FALSE
```

There are differences between how RISC OS 3.1 and RISC OS 3.5 and above handle the *Never obscure icon bar* behaviour. Under RISC OS 3.1, configuring the bit has no effect, and if you click on a window's toggle size tool with <Shift> held down and then click on it again, the window expands to completely fill the screen, rather than returning to its smaller size as you might expect.

With RISC OS 3.5, however, the behaviour is much more helpful. Not only is the CMOS configuration observed, but toggling a window to full size, leaving the icon bar uncovered, and then toggling it again results in the window shrinking back to its previous size, as expected. Furthermore, if this behaviour is set to be the default, clicking on the toggle tool with <Shift> held down will override the setting and zoom the window to fill the screen, covering the icon bar. Thus the <Shift> key negates the current default configuration of the machine.

Scaling objects in Draw

Aaron Timbrell

In RISC User 8:10, Graham Crow pointed out that you can flip an object over in *Draw* by dragging its bounding box beyond its origin (i.e. top left). This works, but you cannot make an accurate mirror image of an object this way. Instead, you can use the *Transform > X scale* and *Transform > Y scale* menu options. To flip an object over, simply enter *-1* in the relevant entry box. You now have an exact mirror image. (In RISC OS 2's version of Draw, these scaling options are in the *Select* menu.)

Keeping track of Message_ModeChanged

Graham Crow

The message &400C1, *Message_ModeChanged*, signifies that the screen mode is about to be changed. If you want to take some action immediately *following* a mode change, then upon receipt of the message, set a flag called *modechanged%* to *TRUE*. Then respond to the null reason code in the polling loop by testing for this flag. If it is set, the mode has changed, so carry out your intended action and re-set the flag to *FALSE*. At the start of your program, you need to initialise the flag to *TRUE* or *FALSE* depending on whether or not you want the action to be carried out on first running the program.

Outline fonts in icons

Aaron Timbrell

If your program uses an outline font (other than the desktop font) in an icon, then you should be aware of a 'feature' of RISC OS. If you change to a mode with different X-eigen or Y-eigen values, then the Wimp will not ask the font manager to recalculate the bitmap for the font. For example, if you switch from mode 31 to mode 12, your anti-aliased text will now be double-height. The only way around this seems to be to detect a

mode-change in your application (see previous hint) by receiving *Message_ModeChanged* (&400C1) and then re-plot the icon, not forgetting to get rid of the old font first!

Preemptive strike

Dr Chris Latham

In a multitasking environment like RISC OS, variables don't always have the values you think they have when one process changes a variable while another is trying to use it. The variable which is most susceptible to this 'shifting sands' problem is *$Dir*. Consider what happens when two *Obey* scripts are run from separate preemptive processes such as two task windows. When each task starts, RISC OS automatically sets Obey$Dir to the appropriate value, but if the first task uses Obey$Dir after the second task has started, the variable will no longer be pointing to the first task's Obey$Dir, and the command will probably fail.

On UNIX systems the problem doesn't occur because the equivalent *environment* variables are private to each process. The way to work round this 'feature' in RISC OS is for every Obey script to copy the value of Obey$Dir to its own private variable on the **first line** of the script; for example:

```
Set My$Dir <Obey$Dir>
```

If you look inside other applications, it is surprising how many fail to do this. Of course, it is not a good idea to define such a system variable unless there is an actual need to use it by an application; if all your Obey file does is to set a Wimpslot allocation and run another file, then such a variable would be largely redundant. If you do need to access other files, though, a private variable is highly advisable.

Data in template files not word-aligned

Alan Wrigley

If you are writing an application that reads data directly from template files, there is a huge trap awaiting the unwary, as I discovered when I was writing the *PlateRead* application on the RISC User 8:9 magazine disc. The problem is that the window data is not word-aligned. The file format is given in Appendix E of the PRM: the header consists of word-aligned blocks, so the first window in the file, which follows the header, will always be word-aligned. However, each window definition is followed by that window's indirected data, and this can be of any length. The following window starts at the first free byte, which means that the window block can no longer be guaranteed to be word-aligned.

Basic can cope with this since the ! (*pling*) indirection operator works on non-word-aligned values. However, if you're writing in Assembler, for example, you must be very careful. It means that if, say, you want to read the number of icons, which is situated at *windowblock+84*, you cannot simply use LDR with an offset of 84 from the start of the window definition. You must use LDRB to read the individual bytes at +84 to +87 and then add the values together, shifting them left as you go. Alternatively, you could copy each window definition to a word-aligned block of memory before you read it, but that requires extra memory, of course.

Groups on the Pocket Book II

Richard Hallas

The Pocket Book II comes with quite a lot of software built in as standard and if you install much more, your system screen can soon become very cluttered. This problem can be alleviated by grouping, a facility which is barely mentioned in the User Guide.

From the *Special* menu on the system screen, choose *Create new group*. Enter a name for the group, and a new icon will appear at the current position on the system screen. At this point you should press <Space>, and a window will open. This new window, which contains the message *No applications*, looks disturbingly like an error window, but in fact pressing <Menu> will reveal the normal system screen menu. You can therefore install applications into it in the usual way. When you return to the system screen by pressing <Esc>, the names of the applications you've installed will be shown beneath the icon. You do not have to re-enter the group window to activate one of these applications; just highlight its name in the list and press <Enter>.

Groups can be removed, just like applications, by use of the *Remove* option on the *Apps* menu. Note, though, that when you create a group you are actually creating a *name.grp* file (where *name* is the group name you entered) in the *APP* directory; so if you wish to delete a group permanently, you must also *Delete* the file from the disc.

Please send in your hints and tips on any aspect of using Acorn's RISC OS machines and Pocket Books. Published submissions will receive the magazine disc of their choice.

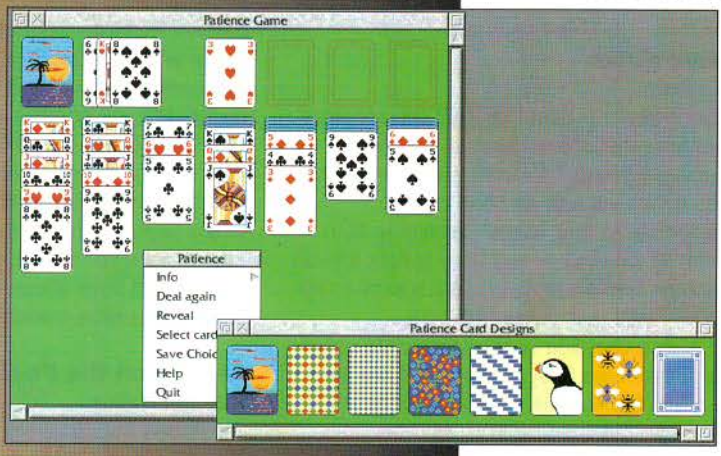
RISC user

Packed with useful applications, the disc costs just £4.75 inc.VAT.
Please add £1 p&p.

Patience Plus

by Alan Stout

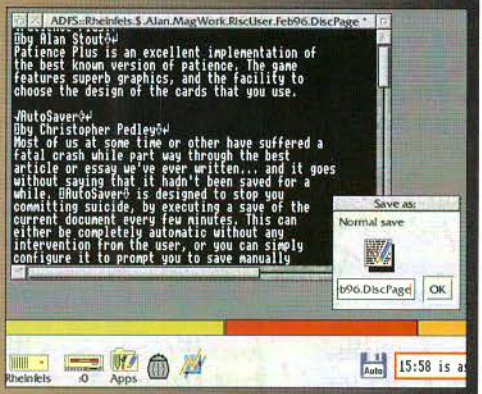
Patience Plus is an excellent implementation of the best known version of Patience. The game features superb graphics, and the facility to choose the design of the cards that you use.



AutoSaver

by Christopher Pedley

Most of us at some time or other have suffered a fatal crash while part-way through the best article or program we've ever written... and it goes without saying that it hadn't been saved for a while. AutoSaver is designed to stop you committing suicide, by executing a save of the current document every few minutes. This can either be completely automatic, without any intervention from the user, or you can simply configure it to prompt you to save manually instead.


ADFS::RheinfelsS.$.Alan.MagWork.RiscUser.Feb96.DiscPage
Patience Plus is an excellent implementation of the best known version of patience. The game features superb graphics, and the facility to choose the design of the cards that you use.
/AutoSaver
by Christopher Pedley
Most of us at some time or other have suffered a fatal crash while part way through the best article or essay we've ever written... and it goes without saying that it hadn't been saved for a while. AutoSaver is designed to stop you committing suicide, by executing a save of the current document every few minutes. This can either be completely automatic without any intervention from the user, or you can simply configure it to prompt you to save manually
Save as:
Normal save
b96.DiscPage
OK
Rheinfels
Apps
Auto
15:58 is a

Maestro files

by V. Oliver

Those who don't have the software or hardware to play the MIDI files elsewhere on this disc needn't feel left out; everyone has a copy of Maestro, so we are supplying some Maestro files. All are transcribed from pieces of music by Scarlatti.

Newsgroups

To accompany this month's Netline article, we are providing a text file which lists most of the newsgroups which are currently active on the Internet. If you can't find anything here that caters for your interests, then you probably don't have any!

RevMouse

by Richard Holland

Left-handed people get a raw deal from computers. You can buy a left-handed potato peeler, but have you ever seen a left-handed mouse? Well, now with RevMouse installed the problem is solved. This handy little module swaps the left and right mouse buttons over, so that left-handed people can use Select with their index finger.

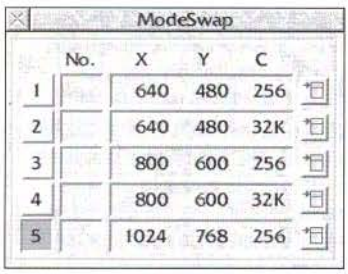
MAGAZINE DISC

Jan/Feb 1996

ModeSwap

by Graham Crow

Changing screen mode on the Risc PC can require up to six mouse clicks. If you change mode frequently (to test programs, perhaps, or to view a picture in a deep colour mode) you will soon find this irksome. ModeSwap comes to the rescue by providing a quick choice from a selection of modes with a single click. You can configure the application so that your own favourite modes are included.



MIDI files

by George Saliaris

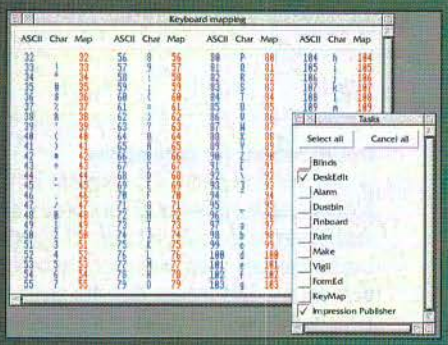
If this month's review of ESP's Software MIDI Synthesiser has made you rush out and buy a copy, here are two MIDI files that you can play with it to keep you going until you've produced your own magnum opus.

ArcScan Data

The *ArcScan* index for this month's RISC User.

Keyboard Mapper

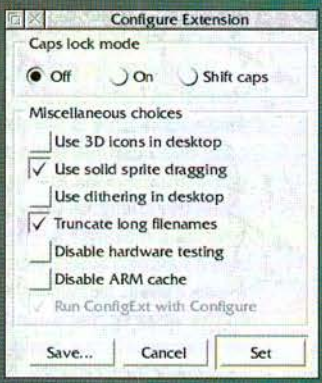
by Alan Wrigley



This application enables you to configure the keys on the keyboard to send any ASCII character you specify for each key. This is useful if you want to assign certain keys to symbols that you use frequently, or to use languages whose characters are non-standard. The program provides an example of the use of the Filter Manager, as described in this month's Wimp Topics article.

Configure Extension

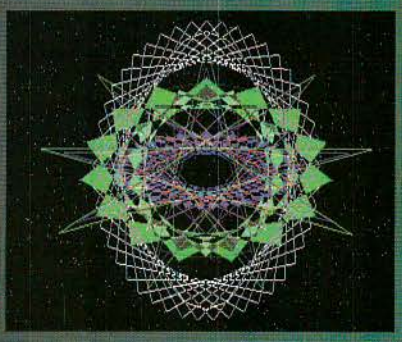
by Matt Browne



From version 3 onwards, RISC OS provides a Configure application to help you configure your computer. Unfortunately, there are still many machine options that are not configurable by this method. Configure Extension rectifies this by providing an interface to allow you to set options such as 3D icons, solid sprite dragging, caps lock mode and other quite subtle effects.

Facets

by R.A. Swetman



Facets is a short Basic program that produces fascinating random symmetrical patterns using trigonometry. The program is listed in this month's Just a Page article.

Compiler Corner

A regular look at the world of C and C++ by Thomas Down

Optimisation for pure speed

Version 5 of Acorn's C compiler includes a number of sophisticated optimisation features which help maximise the execution speed of compiled code. One of the techniques used is common sub-expression elimination. This means that if a given expression, say *x^2*, occurs several times in a statement, it will only be evaluated once. This can save a significant amount of time, especially when dealing with floating point quantities. Even more importantly, when an expression occurs in the body of a loop, as long as the compiler can be certain that the value of *x* does not alter between passes through the loop, code will be generated such that the expression is only evaluated once, before entering the loop.

Unfortunately, calls to functions are not normally treated as candidates for common sub-expression elimination. This is because, without examining the code of a function, the compiler is unable to ascertain whether or not the function has any side effects - for instance, changing the value of a global variable, or printing a message to the screen. If, for example, you had a function which incremented a counter each time it was called, and which had different effects according to the value of that counter, then bugs would be introduced into the compiled code which could be extremely hard to track down if the function were subject to optimisation in this way.

Of course, not all functions have side effects. The *sqrt()* function, for instance, is a function in the mathematical sense of the word: it will always produce the same result when called with a given argument, and it does not produce any output to the screen or to files. Since it is a floating point function, and thus takes some time to execute on machines without a hardware FPA, it is an ideal candidate for common sub-expression elimination.

When using Acorn C, a special compiler directive, *__pure* (note the double underscore) is available which used in the declaration, marks a function as being suitable for elimination. A typical pure function could be defined as follows:

```
_ _pure double circum(double diam)
{(diam*3.14159) ;
}
```

It is worth considering the use of the *__pure* directive whenever you define a function without side-effects.

Many of the most commonly-used mathematical functions are declared in the ANSI *math.h* header file. None of the functions in this header have any side-effects, and thus it is worth declaring them as being pure. However, simply editing the *math.h* file in the *clib* directory will have no effect, since the Acorn compiler contains its own hard-wired declarations of the ANSI header files, and does not actually use the headers in this directory. However, if you create a copy of *h.math* called, for example, *h.puremath* and then edit this to declare all its functions as pure, maths functions will be considered for common sub-expression elimination if you replace

```
#include <math.h>
```

with

```
#include "puremath.h"
```

Note that quotes must now be used instead of angle brackets, since *puremath.h* is no longer a standard ANSI header file.

System calls and return codes

Although RISC OS is a multitasking operating system, this multitasking is implemented mainly at a high level by the window manager, rather than being provided by the kernel as on the UNIX systems where C originated. Because of this, it is often difficult to split applications into several parts, with a parent program invoking child tasks which return to their caller after doing some processing. Unless the child program is a specially written transient utility (which must be hand-coded in assembler), simply invoking it using OS_CLI will cause the parent program to be overwritten in memory. A typical example of this problem is the Basic *SlideShow* application supplied with Risc PCs, which has to use a complicated piece of machine code to invoke ChangeFSI safely.

The C library does, however, provide an easy way out of this problem. While the *_kernel_oscli* function can be used to 'irreversibly' execute another program,

without the possibility of return, the *system* function attempts to invoke another program reversibly. This is done by copying the calling application to the top of its workspace before invoking the child. While this restricts the amount of memory available to the child, it does mean that, when the child exits, the parent application will still be present intact. The *system* function installs handlers which then copy the parent back to its original location and resume execution. From the point of view of the parent application, *system* appears like any other library function - it is called to perform a particular operation, then returns.

This analogy can be taken even further, since the integer value returned by *system* will normally be the code returned by the child program at the end of its *main* function. This return code is normally used to report errors in the child application, with a value of 0 signalling success, and positive values indicating successively more severe errors. When writing command-line utilities, it is always worth using return codes to indicate success or failure, just in case you later wish to invoke the program as a child of another. Return codes can also be useful when writing Obey files since, whenever a program quits, the system variable *Sys$ReturnCode* is set. By examining this variable after calling programs which could fail, it is possible to abort the execution of an Obey file if something goes wrong.

Using LibFile

The *LibFile* utility was first supplied as part of Acorn's old software developers' toolbox, and has since been included, with a windowed front end, as part of the Desktop C and C/C++ packages. As with several of the more advanced tools supplied with these packages, it is often considered to be of use only to experienced programmers who are creating their own libraries from scratch. However, it is often useful to be able to manipulate modules of object code from existing libraries. Using LibFile, this is usually quite straightforward, although a little patience may be required for the best results.

When the Acorn C/C++ package was released, the RISC_OSLib library supplied with earlier versions of Acorn's C compiler was missing. Alternative libraries were supplied, but certain parts of RISC_OSLib, notably the flex memory manager and the BBC-style graphics functions, had no direct replacement. Since then, an update package has been released which includes a stand-alone version of flex, but there is still no convenient way to access the low-level operating system graphics facilities from C, analogous to the MOVE and DRAW commands in Basic. It is, of course, still possible to use RISC_OSLib with version 5 of the C compiler (although not with the C++ system), but there will be name clashes if you also wish to use the newer libraries. Using LibFile, however, it is possible to create a stand-alone version of the RISC_OSLib *bbc* module.

The first step in investigating an existing library, such as RISC_OSLib, is to list its contents. Load the LibFile tool and select only the *List library* option. Drop the RISC_OSLib file into the *Library* field, then run LibFile. A window will open listing all the object modules present in the library. Somewhere in the list will be the *o.bbc* module which includes most of the *bbc* functions. To remove this module from the library, select the *Extract* button in LibFile, enter *o.bbc* in the file list, then run again. You will be able to save a directory which contains the o.bbc module.

Ideally, it should be possible to link programs directly with the o.bbc module, but, like most libraries, RISC_OSLib's design involves a considerable amount of cross-referencing between modules. Several other modules are required for the *bbc* module to work correctly. To discover which modules are needed, use the *DecAOF* tool to list the o.bbc module's symbol table. This is, in simple terms, a list of functions and global variables used by an object module. Each symbol is followed in the list by a brief description. In this case, we are interested in those symbols which are described as external references. Examining the list for o.bbc shows that the module references a number of *os_* functions, so use LibFile again to extract the *o.os* module from the library. Also referenced externally are the functions *bbc_vdu* and *bbc_vduw*. In this case, it is not obvious which part of the library these functions are defined in. The quickest way to locate these functions is to list the symbol table of the library. This option is not available in the LibFile dialogue box, but can be selected from the menu. The complete symbol table for RISC_OSLib is rather long, so you may wish to save the LibFile output as text, then search it using a text editor. In this case, both the 'missing' functions can be found in the *o.swi* module, which can also be extracted using LibFile.

At this point, you will have three object modules, which are required to use the *bbc.h* functions without using the complete RISC_OSLib. It is possible simply to link these three module together with your programs. However, a neater solution is to combine them together to give a new library. This can be done by clearing the LibFile dialogue box, selecting the *Create* button and dropping the three object modules into the *File list* field. Running LibFile will produce a single library file which can be linked with most programs, including those which use the toolbox libraries, to give bbc.h functions.

Working with Photodesk Part 3: Image Processing

by Lee Calcraft

The first problem that often occurs with images scanned in from a photograph is that their brightness and contrast are not as they appeared in the original. The software supplied with most scanners will let you alter these parameters in one way or another, but few if any give you the kind of scope that is offered by Photodesk. Of course you must set

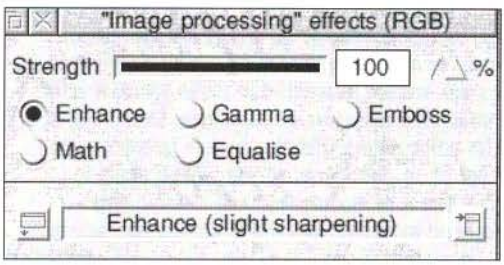


Figure 1. Photodesk's image processing dialogue box.

your scanner software to capture the clearest image possible, since if the file that you drop into Photodesk contains absolutely no detail in a particular area, then however much image processing you do, you will not be able to recover it. Having said this, there is an immense amount that you can do in Photodesk to improve the look of a scan.

Image processing

The clue to it all lies in the organ pipes icon (I know it is supposed to be a histogram). Clicking on this brings up the *Image processing* dialogue box (figure 1) which offers five different types of effects:

Enhance
Gamma
Emboss
Math and *Equalise*

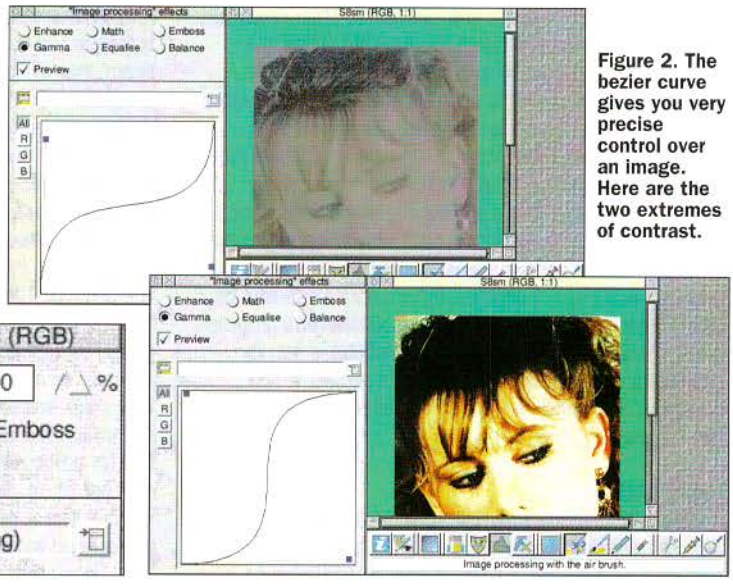


Figure 2. The bezier curve gives you very precise control over an image. Here are the two extremes of contrast.

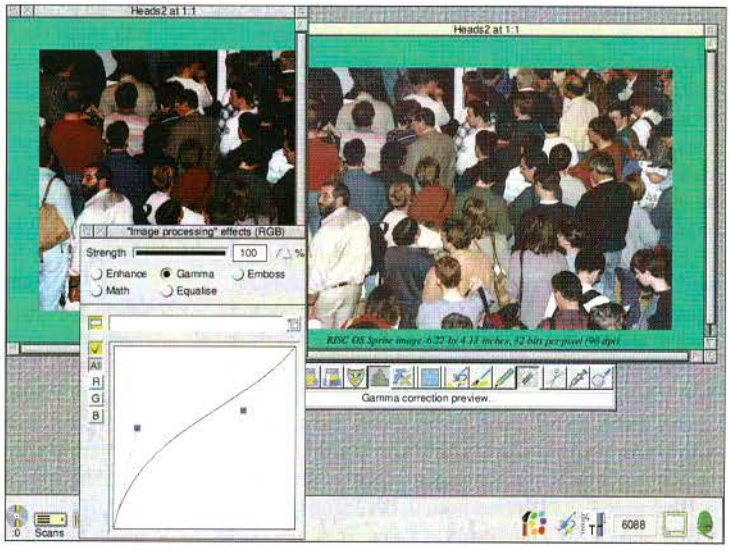


Figure 3. With gamma correction you can lighten the darker areas of an image without making the brighter areas too bright.

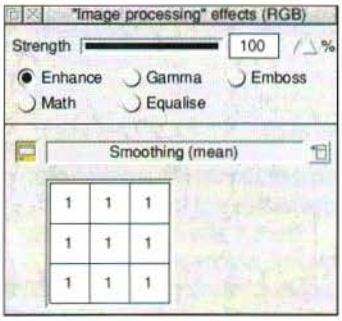


Figure 4. The smoothing filter with its control matrix.

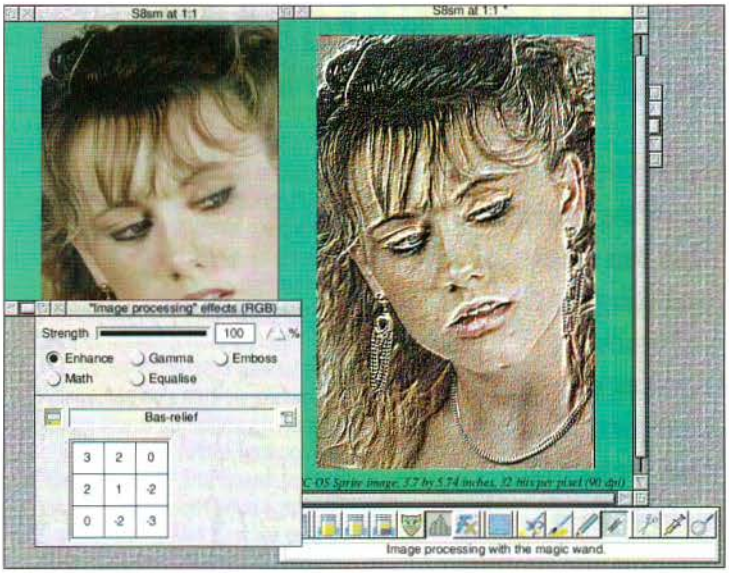


Figure 5. The Bas-relief filter applied at 100%.

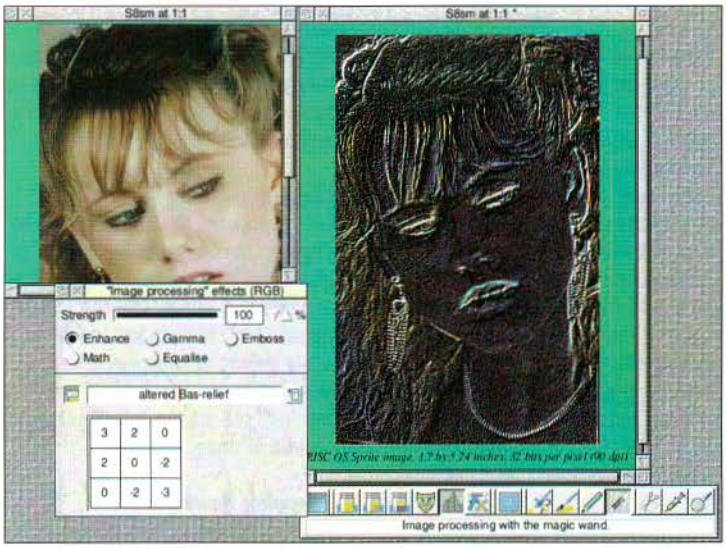


Figure 6. The modified Bas-relief filter in use.

Emboss is a little different from the others, and involves the use of textures, which we looked at last month. The others all involve the application of some mathematics to the intensity levels of the red, green and blue components of the individual pixels which make up your image. We will take a brief tour of just two of these: *Gamma correction* and *Enhance*.

Gamma correction

Gamma correction allows you to alter the contrast of an image in relation to its brightness. It is very useful to do this because most systems - monitors, colour printers, and the human eye - are non-linear, and behave differently from each other. Thus if you view a scanned image of a photograph on a monitor, you may well find that, although the lighter areas of the picture have sufficient contrast, the darker areas have very low contrast (and therefore insufficient detail) even though the original photograph looked OK.

You can fix this by applying a gamma correction, which will increase the contrast in the darker areas without making the brighter areas too bright or washed out. Photodesk's gamma correction options offer massive flexibility, allowing you to control this function with a Bezier curve. What is more, it provides an instant preview, and you can even apply different curves to the red, green and blue components of your image. Contrast this to the very simple gamma control on ChangeFSI, where you type a single number into a dialogue box on a trial-and-error basis.

With Photodesk, clicking on *Gamma* in the *Image processing* dialogue makes available a menu of different gamma settings. It is very unlikely that these will exactly meet your requirements, and the best thing is to ignore the menu and click on the icon to the far left. This brings up the Bezier controls. Now although this looks a bit mathematical, it is really very simple. The curve represents a plot of the output brightness (down the side) against the input brightness (along the bottom), and you can control both brightness and contrast by altering the curve.

If you move the two control points so that the curve is a straight line at 45 degrees, the so-called transfer function will be completely linear, and there will be no change to the image (click on the tick for an instant preview). If you alter the curve so that its middle part is a vertical line you will get a very high contrast in the middle

continued on page 39

Graphics Notebook

This new column will provide hints and tips for users of all painting and photo-retouching packages. For starters, though, Lee Calcraft presents a collection of hints on using Photodesk

Beware of Remove

The last entry in many Photodesk menus is a *Remove* option. It appears below a dotted line to separate it from the main list, and in every case its function is to remove forever the currently selected item. It does this by wiping or editing a corresponding resource file. The problem with this is that you get no warning that the action is permanent, and it is easy to hit this entry by mistake, or, as I did, to use it in the mistaken belief that it would just turn off the selected effect. I am now one filter short of a set!

Filling up your hard disc

Photodesk's built-in virtual memory system, which uses the hard disc as a memory overflow if there is insufficient RAM at any time, can sometimes leave clutter on your hard disc. At times, when I have had a *Disc full* error message, I have found 50Mb or more of scrap files left by Photodesk. It is much more prone to this if you opt to preserve the clipboard between sessions (selectable from the Preferences dialogue box, on the icon bar menu), and (obviously) if you turn off your machine with Photodesk on the icon bar, with images loaded.

You may find it useful to keep Photodesk's Scrap folder on the pinboard, so that you can easily check its contents. It will probably be located within *!Boot.Resources.!Scrap.ScrapDirs*, inside a subdirectory with a code name for your hard drive (mine is currently IDE9087201).

Incidentally, if you have the *Retain clipboard* option set, it is unwise to manually delete any of Photodesk's scrap files, as it may refuse to run after this. It is safer to temporarily unset the option before deleting any files.

Large-scale copying

If you want to use Photodesk's *Copy* option on either the whole or part of an image which is larger than the desktop, simply use the *Magnify* option (from the window menu) to scale down the source and destination images, so that the whole of the source image can be viewed at once.

Cropping downwards

Until recently I had always used Paint to crop images, but it is a pretty awkward feature to use. Photodesk has a really excellent cropping facility, though I had assumed that it did not work because whenever I tested it I had always started at the bottom left and attempted to drag the area to be cropped up towards the right: but this just doesn't work. It was only recently that I discovered that all you have to do is to remember to start at the top left and drag both downwards and to the right.

There is also a very useful size display, which can either be in inches, centimetres or pixels. This is set from the main preferences menu - slightly inconvenient because I always want to know the size in pixels for cropping, but find it easier to use inches for creating new canvases eventually destined for the printer.

Cropping can be really accurate: down to the nearest pixel. All you need to do is to select a suitable scale using the *Magnify* option from the window menu. And one last point, you can drag the cropping box around simply by clicking anywhere in the area and dragging the pointer: excellent.

Re-read the manual

If you have been using Photodesk for some time, and feel that you know most of its tricks, try reading the manual (again) from cover to cover. In all likelihood you will find a whole host of extra options and techniques that you missed the first time around.

Please send in your hints and tips on using Paint, The Big Picture, Revelation, ProArtisan, Studio 24, Photodesk and, indeed, any other relevant bitmap graphics package. Published submissions will receive the magazine disc of their choice.

RISC User Puzzle

To enter, send a copy of the completed puzzle to the Beebug offices in an envelope marked 'Puzzle', together with your name, address and membership number. The magazine disc contains the puzzle as a Draw file, and we suggest that you use Draw to complete the puzzle on the screen, then print out and send us your solution. The closing date is 29th February.

The winner of the Dec/Jan puzzle will appear in the next issue.

Win a magazine and disc subscription with our regular puzzle feature. Puzzle designed by Roger King

DoubleCross 2

Place the 44 letters into the grid to complete all of the words. There are five plural words in the grid.

A G N P
B I N R
B I N S
B I N S
C K N S
C L N T
C M O T
C M O T
D M O U
D M P U
E N P X

Working With PhotoDesk Part3 (continued from page 37)

brightness regions of the picture (see figure 2). If on the other hand you make the middle of the line almost horizontal, you will get a very low contrast.

To see how useful this is in practice, take a look at figure 3. The original scan is a bit too dark and too contrasty, but by applying a small gamma correction we can improve it considerably. Note that what looks good on my screen may not look correct once it reaches the printed page, since printing involves the use of further non-linear devices.

Although I have illustrated extreme examples, there is an infinitude of settings available here, and it is possible to take any picture and alter it until it looks exactly as required for any particular purpose.

Enhance

This set of nine options applies a transformation matrix to the map of pixels which make up your image. You may have come across this extremely powerful form of image processing before. To see how it works, take a look at figure 4. This shows the *Smoothing* filter, with the optional matrix display. The number in the middle represents the pixel currently being processed; the other eight represent its neighbours. This tells the image processing software to make up the new pixel from one part taken from the original pixel, and one part from each of its neighbours. When repeated over the whole image, this will create a blurring effect.

The *Bas-relief* filter can be used to dramatic effect. In figure 5 I have applied it at full strength using the magic wand. You can of course apply it with other tools such as the airbrush, and masks can be used to define areas of application.

One reason for displaying the matrix for each effect is so that you can see what is going on. Another is to allow you to edit any of the effects, and even to create new ones of your own. For example, we can edit the Bas-relief matrix by replacing the one at the centre with a zero. This means that pixels will not be reproduced at all unless there are edges around them. The effect of using this can be seen in figure 6. Clearly, this is how the *Edge detect* filter started life!

There are many other filters worth experimenting with here, and of course many other features of Photodesk that we have not touched on at all in this very brief series, but I hope it will provoke Photodesk owners to experiment a little more, and maybe others may be inspired to take a look at the package. I have to admit that even though I use the package a great deal, in the course of preparing these articles I have come across a fair number of features that I was completely unaware of.

As a follow-up to last month's article, I have prepared a disc of some 20 photographic textures for use in Photodesk, including stones, grass, bark, hessian, rivets, plaster, grass and even a brick wall. The disc can be obtained from Spacetech (01305 822753) for £8.47 ex. VAT.

Putting the Fun into Printing

Alan Wrigley reviews Spacetech's FotoFUN colour printer

Back in RISC User 8:8 I reviewed the Fargo Primera dye-sublimation colour printer, and I was very impressed by the photographic quality prints that it produced. Now Fargo, the manufacturers of the Primera, have brought out a smaller dye-sub printer called the *FotoFUN!*, which promises to raise the quality stakes even higher. As with the Primera, Spacetech have written a driver for the printer and are also supplying the equipment to the Acorn market.

Scan from a print printed at 800dpi. Newlyn Harbour, Cornwall.

The FotoFUN! is a mere slip of a thing at 240x190x100mm in size, and as light as a feather (well, almost...). It is designed to produce a single size of print, namely postcard size, but as an added bonus it can also print onto mugs. Unfortunately, the latter facility has hit a snag in that the special mugs are incredibly expensive, and the feature is not being actively promoted until a cheaper source is found.

Dyeing for some fun

In my review of the Primera I explained what makes dye-sublimation so special in terms of print quality. To recap briefly, the technique allows continuous-tone printing: the ink density of each dot can be varied, which enables a far higher apparent resolution to be achieved than with a conventional printer, where shading has to be simulated by varying the number of dots within a given area. It also allows anti-aliasing to be used to improve the quality still further. As a result, Fargo's dye-sub printers can achieve an apparent resolution of 812x800dpi with 16 million colours.

The FotoFUN! is very easy to set up. Opening the cover reveals a large empty space with slots at either end to take the ribbon's rollers. Installing the ribbon takes all of a few seconds. The Spacetech driver comes on a disc and is installed into *Printers* like any other printer driver, from where it can be used by any RISC OS application in the normal way (this is in stark contrast to the driver for the Primera, which requires you to have Photodesk installed in order to use it).

Printing is very straightforward. Although it will only take one size of media, two types of material are available: paper and card ("thick paper" might have been a more appropriate description for the latter). As with the Primera, you have to use the special materials supplied by the manufacturer, which come in packs with a ribbon which will print the correct number of sheets. Printing costs are quite reasonable for photographic quality at a little over £1 per sheet.

The printer is little more than a dumb engine, and all the processing is done by your computer. The time taken to rasterise the image and print it depends on the resolution you are using, and also on how much free memory you have. The latter can make a significant difference, and since the whole printing operation is non-multitasking, it certainly pays to have a lot of RAM if you want to print at high resolutions. With about 4Mb free in my computer, I found that the process took about 4 minutes for a 200dpi print, or 7 minutes at

Scan from a print printed at 400dpi. The Grand Canal, Venice.

400dpi. However, at the other end of the scale, printing at 800dpi with less than 1Mb free took over an hour!

What you get at the end, though, is superb. Spacetech claims that the print quality is better than the Primera, and I have to agree wholeheartedly. Comparing prints made on the FotoFUN! with prints made from the same source on the Primera showed a slight improvement in sharpness, but a significant improvement in colour saturation and balance. Colours which had a slight tendency on the Primera to look pale and lacking in bite, appeared strong and vibrant on the FotoFUN!. One small drawback of this, however, was that on certain images a slight degree of bleeding was noticeable where there were sharp edges between a pale colour and a strong one. This is probably to be expected by the very nature of the dye-sub printing technique, but it does take the edge off an otherwise superb performance if you are printing an image which will show this up.

One of the reasons why I was particularly looking forward to seeing this printer was the early publicity given to the mug-printing capability. Sadly this has been put on the back-burner for a little while. I understand that the original mugs imported from the USA are incredibly expensive, and the distributors felt that it was uneconomic to supply them. Cheaper mugs are obtainable in Britain, but unfortunately they are a different size and so the clamp which holds the transfer print on during the baking process has to be re-designed. I am told that an affordable mug kit may be available in the near future - watch this space!

Conclusions

If you want the very best out of this printer you do need a fair bit of memory, although having said that, even at 200dpi the prints are astoundingly good. If you have a need for postcard-sized, photographic-quality colour prints, then this little machine will do an excellent job. I can see it being a hit in schools, and when the mug kits are available it might just pay for itself when you start selling your own printed mugs at the next open day!

FotoFUN!

Supplier	***Spacetech***
	21 West Wools
	Portland
	Dorset DT5 2EA
	Tel. 01395 822753
	Fax 01395 860483
Price	***£379 ex. VAT***
	Paper (36-pack) £39 ex. VAT
	Cards (36-pack) £43 ex. VAT
	Special offer: FotoFUN!
	plus Photodesk £499 ex. VAT

If YOU are thinking seriously about
STATISTICS
Then think "FIRST"
1st and 1st Jr have enhanced specifications.
RISC OS 2 and 3 compliant. Structured Menu System. "Spreadsheet" data entry. Simple access to UNMATCHED STATISTICAL FACILITIES. Drawfile output of Graphics. Ultra-easy import and export of CSV files giving smooth data interfaces to other software. Automatic, context sensitive Manual. Mouse driven with optional keyboard shortcuts.
Statistical content of 1stJr is highly relevant to Educational requirements. Upgrade paths from single tasking versions are available.
SCHOOLS Ask about our NEW LOW COST product 1stL (site licence £150)
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INTELLIGENT INTERFACES

Netline

Robin Watts tells the story of news on the Internet

Last month I talked briefly about the way the Internet sprang up, and the way FTP was developed to allow files to be transferred across it. This month I am going to describe the news system.

What is Usenet?

When the first sites were connected by the Internet, by the very fact that they were connected, they instantly had some common interests. Experience gained at one site could often be usefully shared with people at other sites. To enable discussion, the *Usenet* system was devised. This is also referred to as *NetNews*, *Newsgroups*, and other names depending on how people access the system, but the basic beast they describe is the same. Some people even mistakenly assume that the news system *is* the Internet.

Basically, each newsgroup is a pool of text files ('articles') that have been submitted ('posted') to the group by different users around the globe. Users can browse the articles that have been posted, reply to them, or post their own. Frequently people post questions to the groups, and checking back a couple of days later find that people in the know have posted answers.

When the system was originally created it had relatively few groups, dedicated primarily to computer and networking related issues. As time passed, though, and more and more people got on-line, the range of subjects covered by the groups increased dramatically, until today there are few topics of interest left unrepresented.

Each newsgroup is identified by its name, which is typically made up of several components. Take for example, the *comp.sys.acorn.advocacy* group. The structure of the newsgroup name tells us what is discussed within it.

Broadly speaking there are 4 main classes of newsgroups, *comp* (computer-related groups), *rec* (recreation groups), *biz* (business groups), and *alt* (the uncontrolled alternative hierarchy). If this seems a somewhat arbitrary split, that is because it is. No-one in their right mind would actually deliberately devise a system like this, but it is the one that has grown up over the years, and we are now stuck with it. Because of this, it is not uncommon to find groups in seemingly odd parts of the hierarchy; the *alt* hierarchy in particular is a law unto itself, of which more later.

Depending on your Internet provider, you may find additional hierarchies; at work, for instance, I connect through Oxford University, and so we have an additional *ox* set of groups that deal with items of local interest. Demon Internet provides a set of (surprisingly named) *demon* groups that allow users to ask questions specifically related to their services.

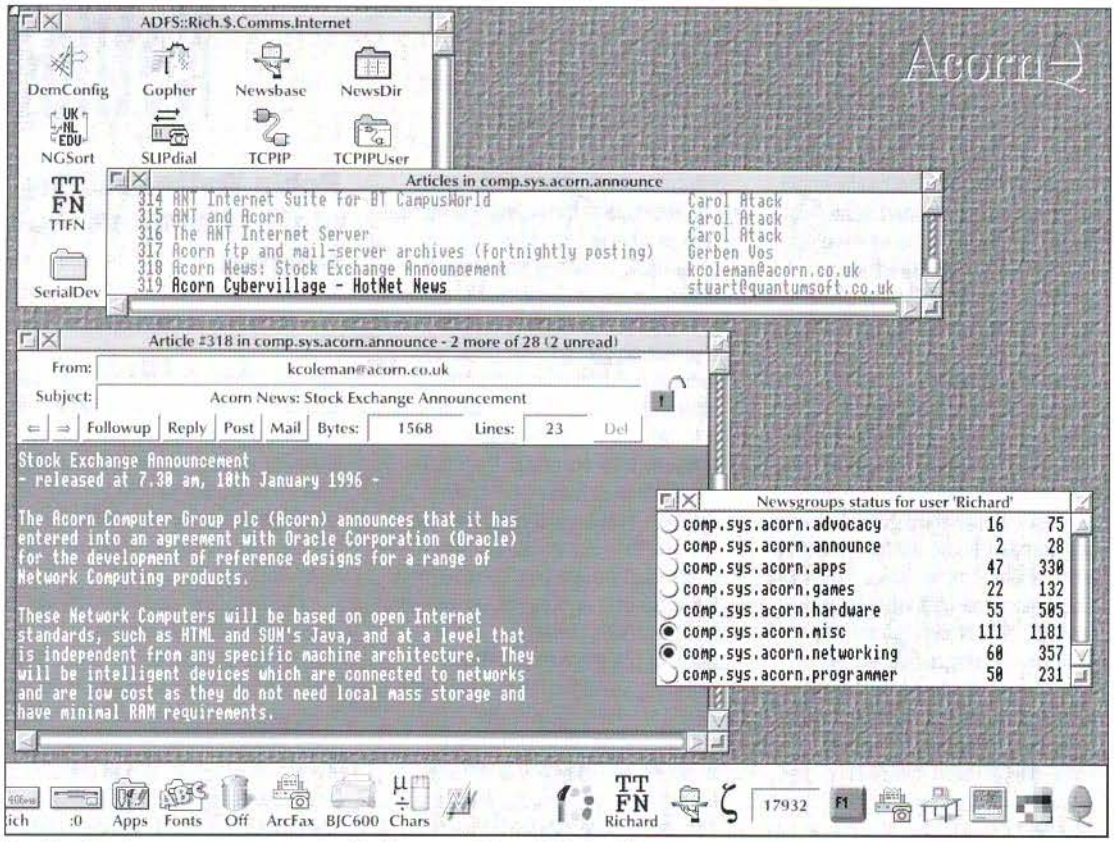
How does Usenet work?

Before anyone starts to use the news system, they should have at least a basic understanding of the way it works. People misusing email or FTP will annoy relatively few people, but people misusing Usenet can annoy thousands of people at once.

At the most simple level, Usenet is a string of server programs that talk to one another. When I post a news article here in Oxford, the server here passes the article to all the other servers it knows about, so each of the servers has a complete list of all the articles ever posted. (In fact, most servers discard articles which are over a week or so old, to avoid storing out-of-date junk, but almost all the postings are archived somewhere around the world, so some record of them lives on.)

The fact that servers have to pass news articles around like this can cause some odd behaviour that can confuse newcomers to the net. Frequently, people complain that their news is three or four days old before they see it; this is caused by the time-lag in servers passing messages on. Most servers share their data lines with more important traffic, and so wait for quiet periods before propagating new articles. In extreme cases this can even result in replies to questions arriving before the questions themselves!

When a user decides he wants to read his news, he connects to his local server and asks it what is new in the groups he is interested in. The server then replies with the number of new articles, and the user can read them if he so chooses. Talking to a news server is typically done using the *Network News Transfer Protocol* (NNTP). I am not going to give any details of this here, except to say that because there is this standard way of talking to the servers, many different news-reading programs exist to do it, so you don't need to worry about it.


ADFS::Rich.$.Comms.Internet
DemConfig
Gopher
Newsbase
NewsDir
NGSort
SLIPdial
TCPIP
TCPIPUser
TTFN
SerialDev
Articles in comp.sys.acorn.announce
314 ANT Internet Suite for BT CampusWorld Carol Atack
315 ANT and Acorn Carol Atack
316 The ANT Internet Server Carol Atack
317 Acorn ftp and mail-server archives (fortnightly posting) Gerben Vos
318 Acorn News: Stock Exchange Announcement kcoleman@acorn.co.uk
319 Acorn Cybervillage - HotNet News stuart@quantumsoft.co.uk
Article #318 in comp.sys.acorn.announce - 2 more of 28 (2 unread)
From: kcoleman@acorn.co.uk
Subject: Acorn News: Stock Exchange Announcement
Followup Reply Post Mail Bytes: 1568 Lines: 23 Del
Stock Exchange Announcement
- released at 7.30 am, 10th January 1996 -
The Acorn Computer Group plc (Acorn) announces that it has entered into an agreement with Oracle Corporation (Oracle) for the development of reference designs for a range of Network Computing products.
These Network Computers will be based on open Internet standards, such as HTML and SUN's Java, and at a level that is independent from any specific machine architecture. They will be intelligent devices which are connected to networks and are low cost as they do not need local mass storage and have minimal RAM requirements.
Newsgroups status for user 'Richard'
comp.sys.acorn.advocacy 16 75
comp.sys.acorn.announce 2 28
comp.sys.acorn.apps 47 330
comp.sys.acorn.games 22 132
comp.sys.acorn.hardware 55 505
comp.sys.acorn.misc 111 1181
comp.sys.acorn.networking 60 357
comp.sys.acorn.programmer 50 231
:0
Apps
Fonts
Off
ArcFax
BJC600
Chars
Richard
17932

Reading the Acorn newsgroups using the freeware Internet Starter Kit.

How to read news

Which program you use to read your news is largely a matter of personal taste but, in general, you should be careful to ensure that you use an off-line reader rather than an on-line one. Off-line readers connect to the server and download all the articles in the groups you read to your local hard disc. On-line readers download just one at a time, and allow you to read them as they download.

There are advantages and disadvantages to both methods. In normal use, you will read the same few groups every day. To download, say, 100 messages may take the computer less than a minute. To read even a few of them will probably take much longer. If you are paying a phone bill it is obviously better to pull the groups down first, and then read them 'off-line' from your hard disc. On the other hand, if you are skimming a whole set of new groups to discover whether you want to read them, you don't want to have to download thousands of articles when skimming one or two might give you all the information you need. In this case, using an on-line reader seems more sensible.

Newer newsreaders offer 'threading' services. This means that articles are displayed next to people's follow-up postings so that you can easily follow the thread of a discussion from start to finish. This seems an obvious feature, but has only become common recently. Any Internet Suite worthy of the name should provide a threaded off-line reader; both the ANT Internet Suite and Termite Internet do, and so does the freeware Internet Starter Kit suite.

Netiquette

The first thing to realise when using Usenet is that it is a cooperative system: it works because people do not abuse it. Every article posted has to be propagated all the way around the world, and will be downloaded by many people, with corresponding increases in their phone bills. Some newsreaders go to the lengths of pointing out that your message will cost thousands of dollars every time you post, and while this is perhaps overstating the case a little, it doesn't hurt to bear it in mind.

The following are some of the unwritten rules of *Netiquette* (net etiquette) that you should follow:

1. If you have an article to post, limit your target audience as much as possible. There is little point in posting a question on how to make your email system work with a specific Internet provider to a worldwide group if your provider has a dedicated local group.

2. If you must post to more that one group, then cross-post rather than multiple post. Cross-posting an article causes just one article to be distributed around the news system, rather than one for each group that it is posted to. This means that people only ever actually have to download and read the article once. Exactly how you cross-post varies from newsreader to newsreader; normally it will just be a matter of supplying multiple newsgroup names. If your newsreader doesn't support cross-posting, then use one that does.

3. If someone posts an article that you wish to respond to, by all means do so. It is often of use to quote sections of the original article to give context to your comments, and again most news readers allow you to do this automatically. It is very important, however, to ensure that you trim the quoted text as much as possible, and check that the text is properly labelled with the original author's name. There is nothing more annoying than wading through acres of quoted text to find a solitary "Me too" line added at the bottom.

4. Don't use Usenet when email will do. Usenet is for public discussions; if a discussion moves to being personal, and not of general interest, use email instead.

5. Before you post check the FAQ: most groups have common questions that are asked again and again. To save these clogging up the newsgroups, lists of *Frequently Asked Questions* (FAQs) and their answers are prepared, and posted regularly. Asking questions that are answered in the FAQ is likely to attract an unfriendly response from the net population at large. A link to the FAQ for the comp.sys.acorn.* groups is present on the Netline Web pages at:

```
http://www.pobox.com/
~warmsilence
```

Spams, Velveteens, and the net.police

In the history of Usenet, there have been attempts to hijack it as a method of free advertising. Various groups have, at one time or another, cross-posted an article to many more newsgroups than was reasonable. This has become such a common event that it has gained its own term, *Excessive Cross-Posting* (ECP), or *Spam*.

A related term is that of *Excessive Multiple Posting* (EMP), where the articles are posted individually rather than being cross-posted. This is also known as *Velveteen*.

Now, as I said before, Usenet is fundamentally a co-operative system. While the mythical *net.police* do not exist, there are some system administrators who watch for misuse of the net, and tidy up after such attacks. If you see a spam, then simply ignore it. The spam postings will be cancelled automatically, but it is much harder to automatically kill the hundreds of "Wow! A spam!" messages that spring up, and these ultimately consume far more bandwidth.

Another traditional Usenet trick is to mail-bomb the spammer. This involves mailing large junk files to the poster of the spam, to fill up his hard drive. Unfortunately, this has the effect of crippling the unwitting Internet Provider he is using with unwanted traffic, and inconveniencing hundreds of innocent users. Coupled with the fact that the poster's name and address is often forged to point at an innocent party, these follow-up effects of a spam cause far more problems than the spam itself.

If you aren't on-line yet, then take the plunge; you won't be disappointed. The net is not just for the technological wizards out there; there is a thriving community of computer users supporting one another with advice and encouragement.

Some newsgroups which will be of special interest to readers of RISC User are:

comp.sys.acorn.advocacy	Discussions about why Acorns are best
comp.sys.acorn.announce	Announcements from Acorn and third parties
comp.sys.acorn.apps	Software applications discussions
comp.sys.acorn.extra-cpu	Extra CPU's in Acorn Computers
comp.sys.acorn.games	Games discussions
comp.sys.acorn.hardware	Hardware discussions
comp.sys.acorn.misc	Discussions about anything else Acorn-related
comp.sys.acorn.networking	Networking discussions
comp.sys.acorn.programmer	Problems encountered by Acorn programmers, and solutions
comp.sys.arm	ARM (but not Acorn) discussions
comp.sources.acorn	Source code for Acorn software
comp.binaries.acorn	Binaries (data files) of Acorn software

Wimp Topics: Using Filters

Alan Wrigley explains how to unleash the power of the RISC OS Filter Manager

One of the many significant improvements introduced into RISC OS 3 was the Filter Manager. This provides an extremely powerful facility for programmers, namely the ability to intercept Wimp poll messages to any other task, and modify them if required. The interception can be made either at the point where the application calls *Wimp_Poll* (a *pre-filter*), or when the Wimp returns a poll reason code to the application (a *post-filter*). In each case, the filter sits between the application and the Wimp and intercepts the message. The program controlling the filter can alter the reason code or the contents of the parameter block before allowing the call to continue, or even stop it reaching its destination altogether. Filters can be applied to any specified task currently active, or to all active tasks.

There are many, many uses for this facility. For example, there are several PD programs around that use filters to enhance the functionality of the desktop. One such program allows you to bring a window to the front by clicking with Adjust on the Back window tool. This is done by setting up a post-filter on all tasks and looking out for open window requests. When these are intercepted, the icon under the pointer is checked and, if it is -2 (i.e. the Back tool), a routine is called which performs the required action of bringing the window to the front, before the open window request is passed on to the application. "The uses are limited only by your imagination" is an often-quoted cliché, but in the case of filters it is almost true.

Using the Filter Manager is really a very straightforward process, but there is one problem for application programmers. By the very nature of the facility, the application which sets up the filter will not be paged into memory at the time the filter routine is called. This means that the routine must reside in the RMA and must therefore be an ARM-code routine; either a complete module or a self-contained piece of code.

In fact, modules that support desktop programs can be used for many different tasks, not just filters. Many commercial applications have support modules that carry out a wide range of functions that can only be done by a program whose location in memory can be determined at all times; a desktop application can't do this since it is paged in and out of application workspace each time it has control of the machine.

Tasks that need a routine whose location can be found at all times include such things as interrupts, call-backs, events, vector redirection and, as we are about to find out, filters. These are all low-level functions that often perform a vital task for the desktop application that it simply can't do for itself.

Filter tips

On this month's magazine disc is an application called *KeyMap* that makes use of filters. The application allows you to re-map the keys on the keyboard to any ASCII character of your choice, and will be useful for people who want to use non-Latin fonts, or perhaps to map commonly used symbols to a little-used key. For example, if you often use a yen symbol, but rarely a dollar, you could make the dollar key produce a yen symbol when pressed.

This is achieved by using filters (located within a module) to intercept keypress events, and then substituting the desired character for the one originally generated by the key. Because you can apply a filter to specified applications, *KeyMap* allows you to switch the effect on or off for any currently active application. Thus you could use the re-mapped keys in Ovation, say, while leaving the rest of the desktop unaffected. The filters are turned on and off by SWI calls from the front- end application.

In RISC User 8:3 and 8:4 we described in some detail how to create modules and how to implement your own SWI calls. We don't have space to repeat all this information here, so the description of the routines in this article will assume that a module header and a SWI handler have already been set up as described in the above-mentioned articles.

Making the call

In some instances you may not need a desktop application to control a filter; installing a module on its

own may be enough. However, KeyMap requires a filter whose effects can be controlled by the user, and so it needs a front-end.

There are just two SWI calls, one to switch a filter on and another to switch it off. In each case we will pass the handle of the task to be filtered as a parameter. A simple way to find out which tasks are running, and their handles, is as follows:

```
DIM buff% 15:t%=0
REPEAT
  SYS "TaskManager_EnumerateTasks"
,t%,buff%,16
  handle%=!buff%
  SYS "OS_WriteN",buff%!4,0 TO
name$
  REM store handle% and name$ if
required
UNTIL t%<0
```

This reads task names and handles one by one until there are no more left. If you only want to know about application tasks (as opposed to module tasks) you should read bit 0 of *buff%!12* on exit and only store those with the bit clear.

The SWI handler in your module will need two entries, let's say *KeyMap_FilterOn* and *KeyMap_FilterOff*. These are called with the task handle in R3 (since this is where the Filter Manager SWIs require it), and they activate routines in the module which call the SWIs *Filter_RegisterPostFilter* and *Filter_DeRegisterPostFilter* respectively. These calls take identical parameters, which are as follows:

R0 = pointer to filter name
R1 = pointer to filter routine
R2 = value to be passed in R12
R3 = task handle (or zero for all tasks)
R4 = event mask

The filter name can be any name you choose - normally something short and meaningful. The routine at R1 is the one which is called when the filter is activated, i.e. when the appropriate poll reason code is being sent to the application whose handle is given in R3. R2 gives the value to be passed to the filter routine in R12 when it is called; you would normally set this to point to your module's workspace if it has any. Finally, the event mask dictates which poll events are filtered. This operates in exactly the same way as Wimp_Poll: setting a bit to 1 masks out that event. So for KeyMap the mask would be &FFFFFEFF, which masks out all bits except bit 8 (i.e. the filter will only be active when a keypress is returned to the application).

Note that had we wanted to set up a pre-filter instead of a post-filter (to intercept calls from the application to Wimp_Poll), we would use the SWIs *Filter_RegisterPreFilter* and *Filter_DeRegisterPreFilter*. R0-R3 are set up exactly as for post-filters, and R4 is not used.

The filter routine itself must preserve all registers, although it can modify R0 to generate a different poll event, and it can alter the contents of the Wimp_Poll parameter block. Flags must also be preserved, so it must exit with:

```
MOVS PC,R14
```

When the routine is entered, R0 and R1 will contain exactly what the filtered application is expecting: the reason code in R0 and a pointer to the parameter block in R1. The target application is paged in at this point, so your module can access its memory using the pointer in R1. R2 contains the task handle, and R12 holds the value that you asked for when you set up the filter.

Support where it's needed

Before listing the routines, there are some other aspects of support modules that are worth considering. Firstly, most modules will need to claim some extra workspace to store variables and other data, and secondly you will often need a method of communication between the module and the application. One way is to call SWIs, but that doesn't allow you to pass large blocks of data, and it doesn't allow the module to initiate the communication.

Memory should be claimed during the module's initialisation routine, using the call *OS_Module 6*, with the size required in R3. This returns a pointer to the block in R2, and you should store this pointer in your private word, which is pointed to by R12:

```
MOV R0,#6
MOV R3,#size
SWI "OS_Module"
STR R2,[R12]
```

You must also release this memory in the finalisation routine:

```
LDR R2,[R12]
MOV R0,#7
SWI "OS_Module"
```

Your application can now transfer data to the module by reading the workspace location from the private word and writing directly to the memory:

```
SYS "OS_Module",18,"modulename" TO
,,,,work%
```

where *work%* will now hold a pointer to the module's workspace. Note that you should make this call *every* time you want to transfer data since the contents of the RMA are not guaranteed to stay in one place (that's why it's called 'relocatable'!).

Communication in the opposite direction is slightly more complex, but since the advent of RISC OS 3 it can be done quite neatly by using the *PollWord_NonZero* Wimp poll event. To use this, you must set bit 22 of R0 when calling Wimp_Poll, and put a pointer in R3 to a word in memory that you want the OS to monitor. If the contents of that word ever become non-zero, you will get a poll event with reason code 13. So if you allocate a word in the module's workspace which the module will set to a non-zero value when it wants to talk to the application, you have a ready-made means of communication. The value it sets could act as a code to tell the application what it wants to do.

On entry to the poll loop, you must find out the workspace address as described above, and then put into R3 that address plus the offset to the word you want to use. When the word becomes non-zero, you will receive event 13 in R0, and in the block pointed to by R1 will be:

R1+0 = address of poll word
R1+4 = contents of poll word

Whatever you do, don't forget to reset the word to zero when you've acted on it, otherwise you will just get the event returned ad infinitum.

And finally...

Having given you a necessarily brief tour of module support, I will finish by listing and explaining the routines from KeyMap's module which implement the filter. The creation of the module header and SWI handler follow the pattern described in the articles referred to earlier. The handler has been set up such that calls to *KeyMap_FilterOn* and *KeyMap_FilterOff* are routed to the labels *filteron* and *filteroff* respectively. Also, the initialisation routine claims 96 bytes of workspace, which is released during finalisation. The source code for the complete module is included on the magazine disc.

```
.filteron
STMFD R13!,{R14}
ADR R0,name:ADR R1,filter
LDR R2,[R12]:LDR R4,value
SWI "XFilter_RegisterPostFilter"
LDMFD R13!,{PC}^

.filteroff
STMFD R13!,{R14}
ADR R0,name:ADR R1,filter
LDR R2,[R12]:LDR R4,value
SWI "XFilter_DeRegisterPostFilter"
LDMFD R13!,{PC}^

.filter
STMFD R13!,{R0,R14}
LDR R0,[R1,#24]
CMP R0,#32:LDMLTFD R13!,{R0,PC}^
CMP R0,#126:LDMGTFD R13!,{R0,PC}^
SUB R0,R0,#32:LDRB R0,[R12,R0]
STR R0,[R1,#24]
LDMFD R13!,{R0,PC}^

.value
EQUD &FFFFFEFF

.name
EQUS "KeyMap":EQUB 0
```

The 96 bytes of workspace is to hold the ASCII codes that will be substituted for the characters 32-126 by the filter. The front-end passes these codes to the module as a block of data, by writing directly to the module's workspace using the method described earlier, when the program is first run and whenever the key mapping is altered by the user.

The routines *filteron* and *filteroff* set up the parameters for the Filter Manager SWIs (remember that R3 already holds the task handle as it should, since this was passed with the call). The SWIs are then called to register or deregister the filter as appropriate.

When the filter is activated by a keypress being returned to the filtered task, the *filter* routine is entered. This first of all loads the key code from the parameter block (R1+24), and checks that it is between 32 and 126. If so, it subtracts 32 and looks up the offset from the workspace pointer in R12, where it will hopefully find the code that should be mapped to that key. This is placed back in the block, and the routine returns. The effect of this will be that the filtered application now gets its keypress event, but with the substituted ASCII value.

As I said at the start, the use of filters is limited only by your imagination, and I am sure we will return to the topic in the future.

PC Matters

Alan Bonsor previews Atomwide's ISAdapter and hooks up some PC expansion cards to his Risc PC

The Atomwide *ISAdapter*, pronounced "ice-a-dapter", is a remarkable piece of hardware which allows PC-compatible ISA expansion cards such as the Creative Labs' *SoundBlaster AWE32* and the Orchid *Kelvin 64 ISA Graphics Card* to be attached to Acorn computers.

Under development for the last few years, the ISAdapter is now nearing completion and should be available for purchase from the end of April. This preview was done at Atomwide's offices using a beta-test Risc PC-based ISAdapter with a Creative Labs' *SoundBlaster Value* card and a *Multi I/O* card.

What is ISA?

ISA, which stands for *Industry Standard Architecture*, is the original standard used for connecting expansion cards to IBM-compatible PCs. It was developed when PCs were in their infancy and is thus rather primitive compared to current interface technology such as VESA, PCI Local Bus and the Risc PC's own expansion bus.

However, it has been around the longest and there are many hundreds of different ISA expansion cards available and still being manufactured, including graphics and sound cards, TV/radio tuners and MPEG players, Multi Input/Output and data acquisition cards, games ports, backup cards, fax/modems, etc.

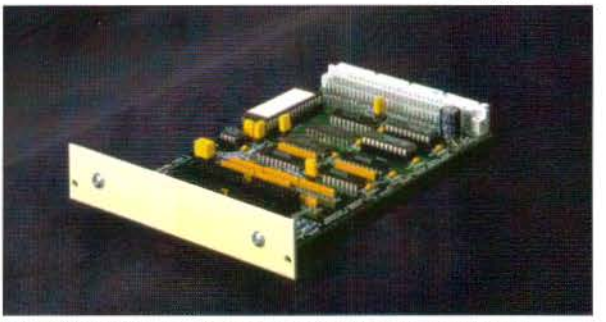
Compared to Acorn expansion cards, these cards are exceptionally cheap for the simple reason that tens of thousands of them are manufactured at a time. A basic 16-bit SoundBlaster-compatible card complete with synthesizer, sound sampler, games port and CD-ROM zzzzdrive interface will set you back as little as £50. The closest Acorn equivalent costs close to £200, and that's just for the sound facilities.

What is the ISAdapter?

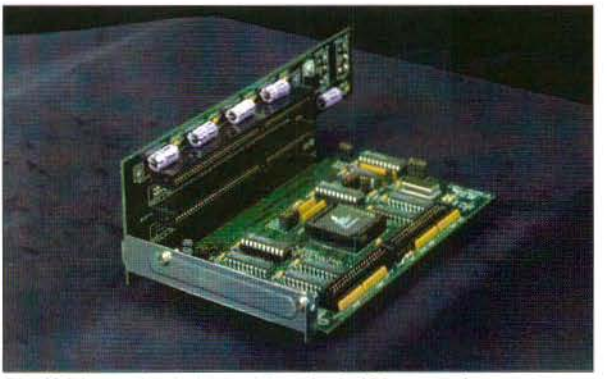
Designed by the illustrious Acorn hardware experts, Patrick Arnold and

Pictures Copyright Atomwide

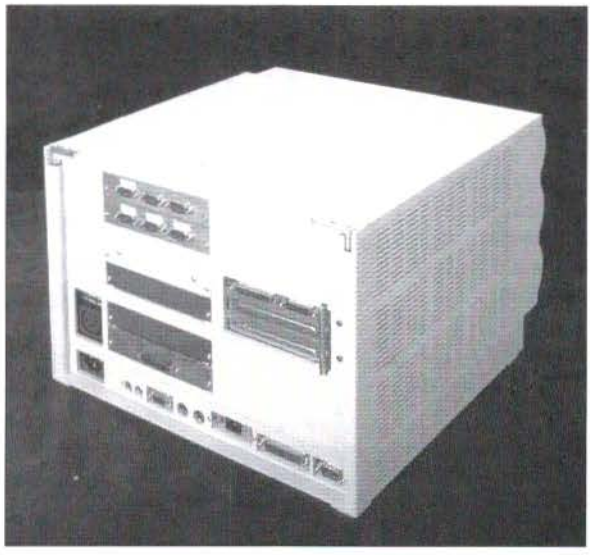
The ISAdapter backplane in an external PC case.



The ISAdapter expansion card connects to the ISAdapter backplane.



The ISAdapter backplane with a single ISA expansion card.



A Risc PC with ISA slice and multi IO card.

Bob Voisey, both of whom build aircraft simulation systems when they're not working on Acorn products, the ISAdapter was originally conceived several years ago as a means of allowing ISA cards to be used from RISC OS. It was not intended that the ISA cards would be used in conjunction with *PC x86* and PC podule cards in order to make them even more PC compatible; in fact, the first ISAdapter prototype was developed on an A5000 and predates the Risc PC and PC x86 card by quite a while.

Since the launch of the Risc PC and the PC x86 card, however, Patrick and Bob have extended and improved the specifications and design of the ISAdapter so that most Acorn computers, from the venerable Archimedes A310 to the flagship Risc PC 700, can make use of ISA cards under both the RISC OS and DOS/Windows environments.

The hardware

The ISAdapter is a hardware upgrade which can be used with all Acorn computers except the A3000, A3010, A3020, A4000 and A4. It consists of three components: a backplane which provides a number of 16-bit ISA expansion slots; an Acorn-compatible expansion card which fits inside your Archimedes or Risc PC and which does most of the hard work involved in communicating with the ISA cards attached to the backplane; and a half-length ISA card which occupies one slot on the ISA backplane and to which the Acorn expansion card is attached.

Two types of backplane are available. The first, for non-Risc PC systems, is an external version which is supplied in a normal PC case. It has eight 16-bit ISA slots to which can be attached seven half or full length ISA cards - the eighth slot contains the interface card which communicates with the ISAdapter card inside the computer. The second backplane system is for Risc PCs and consists of a modified slice which can hold three half or full length ISA cards horizontally mounted along the left-hand side of the case. Up to three of these slices can be daisy-chained together, providing a maximum of nine ISA slots, with the bottom slot in the first slice occupied by the interface card.

In use

Once attached to the ISAdapter, an ISA card can be used in one of two ways. Firstly, it can be used by a PC program running on the Risc PC x86 card or the old-style PC podule card as if the ISA card and program were being used in a real PC. Secondly, and more impressively, the card can be used under RISC OS by standard RISC OS applications, in which case the ISA card is treated by the applications in much the same way as an Acorn-compatible expansion card.

For example, you could attach a £100 internal Fax/Modem card to the ISAdapter and use it to send and receive data and faxes with Beebug's Hearsay and David Pilling's ArcFax; you could use a real SoundBlaster card and SVGA card to play PC games properly on the PC card, complete with joystick support; you could use an ISA graphics card and extra monitor to display your Photodesk or Studio 24 image on one monitor and the applications' windows and toolbars on the other; or you could watch TV or listen to the radio under Windows or RISC OS using a TV or Radio Tuner card.

Of the above examples, none are in the realms of fantasy. The system is still under development, however, and while the modem, radio and sound features are working fairly well, full graphics and sound support are not yet completed. In addition, for an application to access an ISA card under RISC OS, a driver must be available for the card. Atomwide has already developed drivers to support the cards listed below, and drivers for other cards will be developed if there is sufficient demand for them:

Creative Labs' SoundBlaster 16
Creative Labs' SoundBlaster AWE32
Commodore Sound Card

Trust Sound Expert Deluxe 16
Flytech AD/DA Data Acquisition Cards
AIMSLab FM Radio Card
Multi I/O Cards

When the system is finally released, most of the above drivers will probably be supplied free of charge in ROM, so using any of the cards will simply involve plugging them into the ISAdapter and loading the relevant RISC OS application. An example of this is Atomwide's SoundBlaster Mixer application which allows one to adjust, from RISC OS, the synthesizer, CD-ROM, line, wave and microphone volumes, in addition to the bass and treble levels and input/output gain. If you're playing a PC game, e.g. Doom or Discworld, and you want to turn down the volume of the sound effects, you simply have to drop back into RISC OS, adjust the wave volume, and continue with the game. At least, that's how it will work when it's released.

Currently, sample playback doesn't work at all, although MIDI synthesis under both RISC OS and Windows works fine. The most important feature still to be implemented, and the reason that the system is not yet available, is DMA (direct memory access) support under the PC environment. DMA is required by most graphics and sound cards in order for them to provide facilities such as 16-bit sound playback and sampling and high screen resolutions in 16- and 24-bit colour.

The RISC OS side of DMA is close to completion. Once the drivers have been written, you'll be able to sample 16-bit stereo sounds through the SoundBlaster card into applications such as Computer Concepts' AudioWorks. Atomwide has also had a Cirrus Logic VGA graphics card running under RISC OS and performing the simple task of displaying a sprite on a second monitor.

The PC side of DMA support is proving a little more complicated, as it has required Aleph One to rewrite the PC x86 software - a process which is still taking place. Under DOS and Windows, the system operates just like in the real PC world, complete with all the usual configuration fun associated with installing PC expansion cards. IRQ numbers, port addresses and DMA channels all have to be considered when installing a new card. Thankfully, most PC programs, and particularly games, have setup programs which automatically detect which cards are present and configure themselves accordingly. Installing games such as Doom and Discworld is a piece of cake. Both programs correctly identified the Creative Labs' SoundBlaster Value card attached to the ISAdapter and automatically selected the correct IRQ, port address and DMA values.

Cards which do not require DMA support (Multi I/O cards and the AIMSLab FM Radio Receiver, for example) work flawlessly under RISC OS and the PC card. The demo system used for this preview had a US Robotics 28,800 modem attached to the serial port on the Multi I/O card, and Hearsay logged onto Arcade without a murmur of disquiet. The Multi I/O card in fact had two serial ports, a parallel port, a games port and a floppy and hard drive interface. All the ports, except for the drive interfaces, can be used under the PC card, while under RISC OS the software driver currently only allows access to the serial ports. In the release version the parallel and games ports will also be available to RISC OS applications. It is possible that the drive interfaces may also work in the future, although they are low priority at the moment because, while they will work reasonably well in the PC environment, under RISC OS they will probably be extremely slow. Just to prove that the system really is ISA compatible, Atomwide has successfully tested a Panasonic CD-ROM drive attached to the Creative Labs SoundBlaster CD-ROM interface running under the PC card.

The Atomwide ISAdapter

Supplier	*Atomwide* *7 The Metro Centre,* *Bridge Road,* *Orpington,* *Kent BR5 2BE.* *Tel. 01689 814500* *Fax 01689 814501*
Email:	*sales@atomwide.co.uk*
Price	*Risc PC internal system* *£269 ex. VAT* *Risc PC extra ISA slices* *£129 ex. VAT* *External 7-slot system* *£299 ex. VAT*

The future

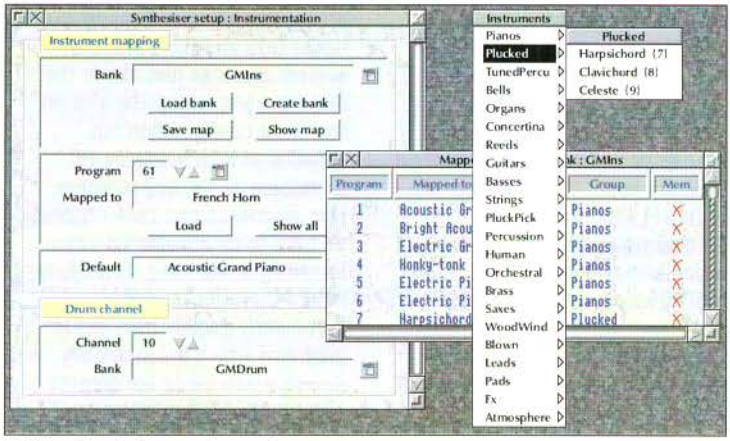
The ISAdapter opens up a whole new world of expansion options for Acorn users. Possible RISC OS drivers include one for the £30 Danmere *Backer* ISA card which allows 1.5Gb of hard drive data to be backed up onto a 3-hour video cassette; drivers for low-cost PC scanner cards; and it may even be possible to play 3DO games on your Acorn computer through the 3DO Blaster.

Although the basic system itself is fairly expensive at £269 ex. VAT for the Risc PC version and £299 for the external version, the fact that ISA cards themselves are so inexpensive means that the system will pay for itself very quickly. I personally can't wait to get my hands on one.

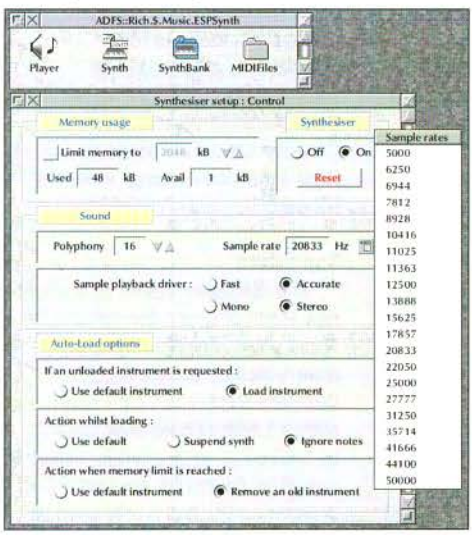
Sounds Fantastic

Richard Hallas lends his ear to the new software-based MIDI Synthesiser from ESP

When the Archimedes was first launched, its sound system was really quite something: the eight channels of stereo sound made the facilities offered by other computers look rather silly. However, until the release of 16-bit sound for Acorn machines last year, the once-excellent sound system had, sadly, been left to stagnate. Multimedia computers these days are expected to provide a wide range of sound and video facilities and, in the PC world, particularly, much use is made of MIDI (Musical Instrument Digital Interface), an established standard in the electronic music world. Modern MIDI instruments are supplied with General MIDI, a core set of 128 instrumental sounds.



Editing the instrument mappings.



Configuring the synthesiser preferences.

Extra-sensory perception?

The designers of Acorn's new 16-bit sound system, Expressive Software Projects (ESP), have now released their long-anticipated software-only MIDI synthesiser, which provides MIDI playback facilities not only to all RISC OS programs but also to software running under the PC card. Gone is the need for an expensive sound card, MIDI keyboard or external synthesiser box; this cheap product consists of just three high density discs. The instruments are supplied on disc (whereas they are normally built into ROM in a hardware synthesiser), and the software synthesiser lets you play MIDI files without the need even for a MIDI card.

Installation is a simple case of dragging the icons onto the hard disc. An updated version of the *Player* application is supplied to play MIDI files, and the main software itself consists of the *Synth* application and a *!Fonts*-like *SynthBank* resource which contains the 128 General MIDI instruments.

The current release of the software is only available for machines which are fitted with 16-bit sound cards and RISC OS 3.5 or later, but an 8-bit sound version will be released shortly, which will offer only slightly degraded sound quality to users of earlier machines with RISC OS 3.1. (Early Risc PC 600s did not have the 16-bit sound card fitted, and so must be upgraded.)

Setting up the software

Because the instrument sounds are stored on your hard disc, they must be loaded in as needed while music is playing. There are several consequences of this, the most obvious of which is that it takes time for the instruments to be retrieved. This can manifest itself in one of three ways: the notes which are supposed to be played by the instrument being loaded might be played by a default instrument until the required one

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VOLUME 2

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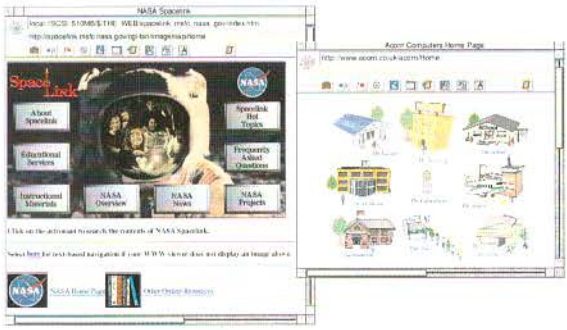

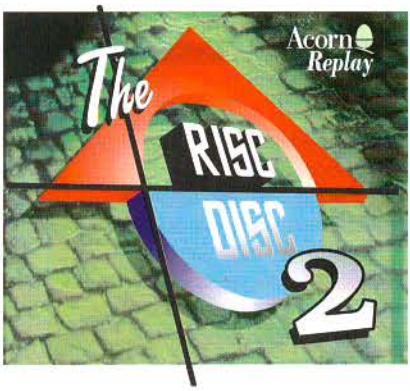

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becomes available; or the music may be suspended until the sound has loaded; or the notes can simply be ignored. These alternative actions are user-selectable. I did find that the synthesiser tended to produce quite loud clicks when it needed to retrieve several new instruments at the start of a piece, but the effect didn't last long, and it was possible to restart playback and hear the music without such distractions the second time.

ESP MIDI Synthesiser

Supplier	*Expressive Software Projects*
	21 Beech Lane
	West Hallam
	Ilkeston
	Derbyshire DE7 6GP
	Tel./Fax 0115 929 5019
Email	*synth@exsoftpr.demon.co.uk*
Price	*£39.95 ex. VAT*

Another consideration of having to load instruments from disc is, of course, the amount of memory they require. You can set an upper limit on the amount of memory which the synthesiser is allowed to use for loading instruments, which is an essential option unless you have a great deal of memory in your machine. If the limit is reached, the synthesiser will either use the default instrument sound instead or, font manager-like, discard an older instrument in favour of the new one. In fact, it is even possible to suppress loading of new instruments completely if you wish.

As for the sound quality, that can also be configured. The whole process of synthesizing MIDI music entirely in software is very processor-intensive, and you can reduce the overheads by editing various parameters. It's possible to choose between fast or accurate and mono or stereo playback, and it's also possible to choose the sample rate of the sound system and the number of notes it can play simultaneously. Currently, the maximum number of simultaneous notes is limited to sixteen, but as faster machines and improved sound drivers appear from Acorn, this restriction will be lifted, and it will be possible to trade in the quality of the replayed sound against the number of available voices.

Precision instrument

Being software-based, the whole instrumental configuration can be changed very easily, and an Instrumentation Setup window allows you to view and edit the instruments and their mappings. It is also possible to alter the drum channel and the default instrument used when the synthesiser reaches its memory limit, for instance.

Whilst the synthesiser will normally load instruments automatically as required, you can pre-load the sounds manually by choosing them in this window and clicking a *Load* button; indeed, you can pre-load the whole set if you wish with a single click. In fact, if you drag a file onto the Synth icon, it will be scanned and the software can be persuaded to show you which instruments are needed one by one and let you select which ones to load. Summary windows are available which display the available instruments along with their mappings and which are currently in memory. You can even create new banks of instruments.

But how does it sound?

The software's facilities are therefore very extensive and flexible, but the important consideration is how well it sounds. Well, it's remarkably good. I have a Yamaha TG100 synthesiser box, and this software has left me wishing that I hadn't bought it. Certainly that comment must be qualified by saying that the sounds provided by the software synthesiser are much less realistic than the ones built into the Yamaha; after all, to fit 128 instruments onto just three discs alongside other software by necessity means that quality has had to be sacrificed. Larger samples would sound much better, but would occupy a lot more disc space. However, to me, the sound output from the software synthesiser actually seemed crisper and more distinct than my Yamaha box, and somehow better balanced overall.

The important point is that, unlike a hardware synthesiser, it's ever so easy to upgrade the sounds, and indeed ESP is already working on a new set of better quality samples which will be available as an inexpensive upgrade. The supplied sounds are recognisable, certainly, and will no doubt be largely satisfactory for many users; but it's fair to say that some are better than others, and the piano sounds in particular are a little disappointing. A few sounds change characteristics over their ranges, whilst the others sound uniform. There are other limitations, too; currently the software does not perform fancy effects such as reverberation. You get the notes, and that's it; other effects would be too processor-intensive. However, as faster machines appear, this situation may well change.

Conclusions

I tested the software with Sibelius 7, PMS, Rhapsody, the supplied Player application and software running under Windows on the PC card. In all cases it performed extremely well, with the only annoying feature being the crackle as new sounds were loaded (which can be alleviated by changing settings). In performance terms, therefore, the package does what it sets out to do extremely well. I found the presentation of the desktop front-end rather heavy-handed and the supplied documentation disappointing; but the software actually performs a remarkable feat, and is incredible value for money. I get the feeling that a lot of hardware synthesisers won't be getting bought by Acorn users in future!

TECHNICAL QUERIES

We answer more of your technical problems, this time on C++ and serial mice

Q From C to C++

When using Acorn's C/C++ package, there appears to be no way to direct Make to use the C++ compiler instead of the default CC compiler. I tried putting a C++ directive (#include iostream) in a source file, but the compilation promptly failed, pointing out that I should use the C++ compiler. Have you found a way of doing this?

Michael Titmas

A All your C++ code should be in a *c++* directory, rather than in *c* with your normal C code. To create a make file for your code, start a new project in Make, set the tool to *Link* and supply a suitable name and target name for the program. Save the make file. Now drag your code from the *c* and *c++* directories, as appropriate, to the *Insert* icon, together with the C++ library (*AcornC_C++.Libraries.c++lib.o.c++lib*) and the C library stubs (*AcornC_C++.Libraries.clib.o.stubs*). Click on the OK button next to the *Insert* writable icon and click on the save button. You can then click *Make* to compile and link your program.

Tony Howat

Q Objectionable veneers

When I tried compiling by using the Acorn C++ compiler directly, it objected to the Toolbox veneers that I had used. Are the C++ compiler and the Toolbox interface compatible? There is a distinct lack of Acorn's C++ example code included with the system, so the answer to this question cannot be guessed at by looking at their examples.

Michael Titmas

A The *toolbox* library supplied is a C library, so that explains the lack of C++ sample code. The fact is that using a C-style programmer interface for a GUI isn't the 'proper' way of doing things in C++. C++ is an object-orientated language, and Wimps fit the OOP paradigm remarkably well. Acorn hasn't produced a class library to allow C++ programmers to program the Toolbox in the OOP way, which brings into question why they actually bothered to provide a C++ compiler if they aren't going to provide any incentive for people to use it!

Still, grumbling aside, as with any C code you can call the toolbox library easily from C++. The operation is identical to C, but any declarations of C-style functions should be in braces ({}) and preceded by extern "C". To be able to #include C headers in C++ programs, add this before the function definitions:

```
#ifdef __cplusplus
 extern "C" {
#endif
```

and this afterwards:

```
#ifdef __cplusplus
 }
#endif
```

After #including the relevant header files, you can call the C code in the usual C way.

The toolbox library headers can be #included without modification in C++ code as Acorn supply them with these lines ready for inclusion in C++ code.

As the toolbox headers are 'C++-ready', I suspect that the errors that are occurring are actually caused by your not linking the toolbox libraries with your code. You need to make sure the appropriate object files (wimplib if you use any wimp_ calls, eventlib if you use any event_ calls, toolbox for any Toolbox operations and renderlib for the Draw file renderer) from Acorn_C++.Libraries.tboxlibs are included in the final program. You add these to the link in the same way as stubs, clib and c++lib in the previous answer.

Tony Howat

Q Mouse for breakfast

The Risc PC can be configured to use a PC serial mouse instead of the standard Acorn one, but is it possible (perhaps with the addition of a module) to have this facility on the standard Archimedes?

Rob Stuckey

A A public domain application does indeed provide this facility. Written by Stuart Tyrrell and called !SerialMse, it should be available from most PD libraries.

Richard Hallas

Mini Reviews

The Patience Addict

by Alan Bonsor

Until recently, my preferred Patience compendium was Jason Horsnell's public domain SPatience, the 'S' standing for Super (it really is very good) and Script, as it has its own script language with which you can create your own Patience games. A challenger has now arrived in the form of The Patience Addict from CCS, and I have to admit that I am hooked.

The attractively arranged Crescent Patience.

Whilst SPatience comes with nine different Patience games and tiny cards, The Patience Addict provides no fewer than twenty ways to while away those winter evenings, with two packs of cards which wouldn't look out of place on a Baccarat table.

Recognise any of these names? Beleaguered Castle, Bisley, Calculation, Crescent, La belle Lucie, Demon, Forty Thieves, King Albert, Klondike, Miss Milligan, One Foundation, Parterre, Puss in the Corner, Pyramid, Royal Cotillion, Russian Solitaire, Scorpion, Tower of Hanoi, Windmill and Yukon: you'll find them all in The Patience Addict, with full instructions and ranked according to difficulty.

The *Game selection* window also tells you how many packs and which cards are used in each game, the average playing time, and the recommended screen resolution; some of the games require a very large desktop. The *Game options* window allows you to set the display font, pack type, background colour and window scale, whilst the *Statistics* window displays details such as the number of times you've played each game, and how many successes, near successes and failures you've had.

Although The Patience Addict has a very intuitive front-end and looks very good, I do feel that several areas of the program could be improved. Firstly, when you drag a card, the full card should be dragged, not just its outline. Secondly, double-clicking on a card in the tableau, stock or waste pile should automatically send it to the correct place in the tableau or foundation pile; and thirdly, the instructions could be a little clearer.

Verdict:
definitely one for Patience addicts.

Product	*The Patience Addict*
Supplier	*Creative Curriculum Soft.* *5 Colver Hill Road* *Savile Park* *Halifax HX1 2YG* *Tel. 01422 340524* *Fax 01422 346388*
Price	*£14.95 inc. VAT*

Impressive

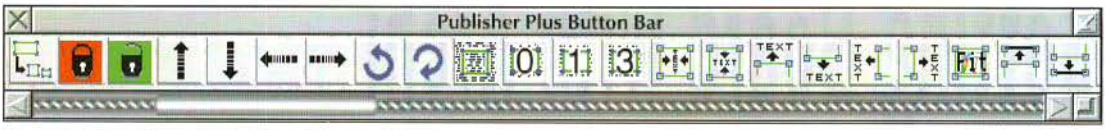
by David Bradforth

When Impressive was first advertised, I was keen to get hold of a copy, as I do tend to find that some of the more complex features of Impression are difficult to obtain using keypresses and mouse-clicks. Impressive is designed to alleviate this difficulty by providing a button bar which allows most, if not all, of Impression's features to be accessed simply by clicking on an icon, instead of the usual searching through menus or trying to remember keypress combinations.

Impressive is supplied on a single floppy disc along with a well-produced manual in a neat plastic box, and three versions are supplied, for Impression Style, Publisher and Publisher Plus. Loading Impressive requires the user to run both the *Executor* and *Buttonbar* applications; I must admit to overlooking this initially, and then wondering why it wasn't doing what it was meant to. This was, admittedly, my own oversight, but I feel that it is unexpected and confusing, and it would be much preferable for the *Buttonbar* application to load *Executor* automatically.

In order to make use of Impressive, the side rulers in Impression need to be turned off. This instruction is given in the manual, but no reason is provided. The number of features which Impressive provides certainly make up for the restriction, but it seems odd that use of Impressive requires you to turn off a potentially handy feature of Impression.

Although some 100 icons are provided on the button bar by default, individual buttons can be removed or altered to suit the user's own preferences. This requires you to edit a !Run file for each button, which may well put many less technical users off. The length of the button bar can also be reduced, but



A selection from Impressive's vast array of buttons.

again this depends on your changing a variable in a !Run file.

About the only major problem I had with using Impressive was the fact that whenever I maximised the Impression window to view a page at full-size, the buttonbar disappeared behind the main window. I'd like to see a facility to keep the button bar at the front of the desktop; it's pretty useless as a time-saver otherwise!

In conclusion, Impressive does what it sets out to do and is well worth the asking price, though it requires a small amount of technical knowledge from the user to make the most of it.

Verdict:
the ideal complement to Impression.

Product *Impressive*
Supplier *Quantum Software*
35 Pinewood Park
Livingstone EH54 8NN
Tel. 01506 411162
Price *£9.95 (inclusive)*

ArtWorks Video Guide

by Richard Hallas

Step-by-step tutorials in manuals are all very well, but for such a visual program as ArtWorks, there's nothing to beat being shown how to do things by a professional user; and who better to conduct such a tutorial than the winner of the first ArtWorks competition? Walter Briggs, the host of this video, is a remarkably talented artist whose work is seen frequently in Acorn magazines.

Pineapple Software has produced an hour-long video which is aimed at introducing the novice user to ArtWorks. Walter goes through the basic facilities provided by ArtWorks, such as the selector and zoom tools, the creation of lines and shapes, and use of layers. I think that the video strikes a good balance: there's just enough to give a good idea of how the basic facilities work, and to tantalise the viewer about the possibilities of the program, without inducing boredom. Thus, for someone who has just bought ArtWorks, watching this video will provide a good stimulation to delve into both the package and its manual.

After the explanation of features, the latter half of the video is devoted to two tutorials. The first, and more complex, shows the creation of a tiger's face, whilst the second is an easier landscape which could be attempted by anyone. The tiger looked very familiar to me, and I was surprised to find that this particular tutorial is no more than a visual presentation of Walter Briggs' article, *A Prowl Around ArtWorks*, which was published in RISC User 8:1; the picture is the same, as are the techniques described. Even the video's subtitle, 'Prowl through ArtWorks', is similar. It seems a bit of a pity, therefore, than no acknowledgement of the RISC User article is made. Anyway, seeing the printed tutorial in action with a voice-over gives it an extra dimension, and the deceptive simplicity of the tiger picture is made clear. The second picture tutorial really can be attempted by anyone, despite looking quite impressive.

Overall, then, this is a valuable and quite well-produced video. The picture quality on the TV screen is pretty good, although some paler shades look very similar; and a bold font is used so that text remains legible. The only major criticisms I would make are that Walter spends too much time talking about keyboard short-cuts without always explaining alternative access methods first; there's not really enough coverage of defining and using colours; and the two tutorials end up, overall, being studies in the use of graduated fills. It's a good first attempt, though, and I hope that Pineapple and Walter Briggs will

Walter Briggs' Tiger: The main focus of the video.

produce further videos covering more advanced use of ArtWorks, as well as covering Pineapple's own Studio 24, and perhaps Photodesk. There are plenty of opportunities for further productions. The video is good value, but if all you're interested in is the tiger tutorial, then you could save a lot of money by buying a back copy of RISC User 8:1 instead!

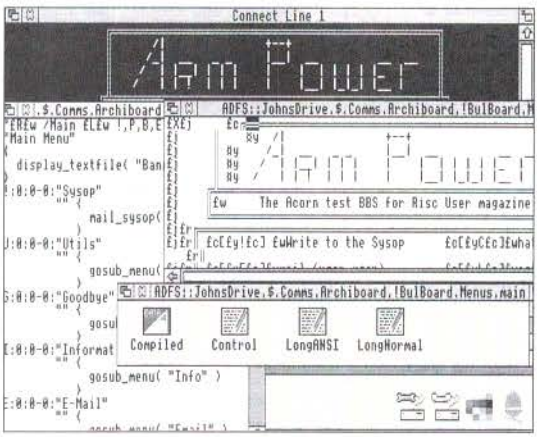
Verdict: excellent for beginners.

Product *ArtWorks Video Guide*
Supplier *Pineapple Software*
Suites 13 & 14
South Park Business Centre
310 Green Lane, Ilford
Essex IG1 1XT
Tel: 0181 599 1476
Fax 0181 598 2343
Price *£19.95 (inclusive)*

Getting Board with Archi

John Stonier, Sysop of the Digital Databank BBS, installs the Archiboard Bulletin Board software

Have you ever wanted to start a Bulletin Board System (BBS) of your own, to provide a service to comms users around the country and meet and chat with fellow enthusiasts online? If so, you'll need to look around and obtain suitable software. Archiboard is a commercial BBS package from Supreme Software Systems which claims to provide advanced Bulletin Board facilities for Acorn machines.



Designing the main menu.

To make proper use of Archiboard, you must have at least RISC OS 3, 2Mb or more of RAM, a minimum of 3Mb hard disc space (preferably 40Mb or greater) and either a suitable modem and telephone line or an Econet/AUN-equipped Ethernet compatible network. I decided to test the package using a relatively low-specification system: a standard Acorn A420/1 with RISC OS 3, 4Mb RAM, 7Mb free hard disc space and a USRobotics Sportster 14,400 fax-modem.

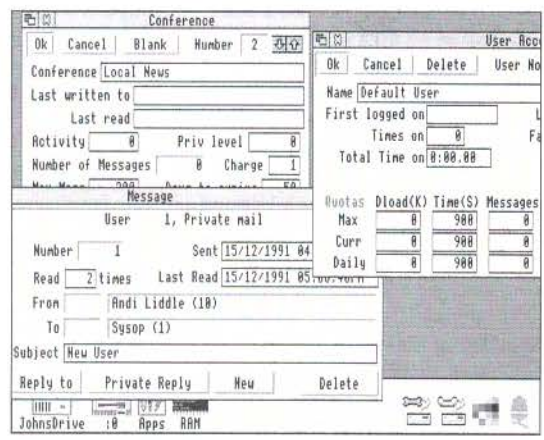
Installation

Once I had copied the files onto my hard drive, I had to use the *BulUtils* utility to set up the usage, size of user base, message base, Sysop's name, Sysop's password and whether to be networked to Fidonet or not. Next, I had to configure the software to work with my own computer system. A 'global settings' text file needed to be edited to set up the various parameters required every time the BBS is loaded. Finally, the modem settings were configured by running *BulBoard* and editing the relevant port. Each port has a *Modem settings* window, containing a number of slightly bewildering modem configurations ranging from *Split/DTE speed* to *Escape code sequence*. The manual comes to the rescue and provides some useful tips for those who don't know their *ATW*s from their *ATE*s. I was disappointed, though, that preset drivers were only provided for the Miracom WS300, WS3000vis and Hi-Tex EC2400 modems. By the end of the installation process I felt pretty confident that the BBS had been set up correctly.

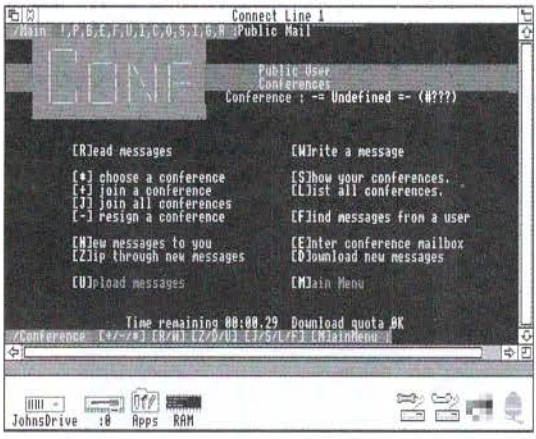
Running a BBS

The manual devotes a large section to both the *BulBoard* and *BulUtils* applications, which provide all the necessary functions to run the BBS. A very important part of the software is the BBS database, which contains information on users, messages, files, directories and conferences. BulUtils provides every conceivable setting to shape, construct and maintain the BBS, and can be used to modify existing data once your BBS gets off the ground.

The BulBoard application contains all the options needed to actually control the BBS. A *Control Panel* menu provides a large number of functions, enabling you to globally send messages, show logs and run utilities. Each option is explained briefly in the manual (though with a few omissions), giving you an overall idea of the sort of commands at your fingertips.



Configuring message and file areas.



The Public Message menu in use.

Designing and testing

I set up a small BBS called *ARM Powered* to test the features of Archiboard. The package already comes with a default BBS layout, and you can build your system on top of this rather than designing one from scratch; extra facilities can be added at a later date. The most important areas of a BBS are the file and message areas. Several are already preset, but new ones can be added by using BulUtils. Each message or file area can be made public, private, read- or write-only. The other thing that needs to be done is to set up the default user, which is used as a template for any new users. It is important that the appropriate read/write options are set for the file and message areas; otherwise security will be compromised.

To provide a colourful and attractive front-end for users, menus need to be designed and linked to each other using special control files. The concept of creating these menus is explained a bit too briefly for my liking, considering that it is an extremely important part of setting up. Each menu directory consists of a control file, a compiled file and display files, depending on what sort of terminal settings your users have, which could be ANSI, VT100, normal ASCII or text for dumb terminals.

The Sysop has the ability to execute tasks to ensure the smooth running of the BBS. These are available from the BulBoard menu, and cover such facilities as showing statistics and logs, running utilities, and broadcasting messages to users. The software has its own C-like script language, allowing you to write and customise scripts for your own purposes. The manual provides an excellent and informative introduction to this feature, though I would recommend that this section is skipped until you become more experienced.

The competition

I use *ARCbbs* to run my own BBS. Archiboard provides more configuration options, but one of the major facilities which lets Archiboard down is that it apparently does not cater for user defined flags, which allows areas to be restricted to certain users. There is a 'privilege' option, but this is more cumbersome. I also found Archiboard more complex than ARCbbs to understand, though once grasped it allows more flexible extras to be added to the BBS. All in all, I think both packages provide a professional approach, but from different angles. The other alternatives are *ArmBBS* and *Newsflash*, which are shareware. These are both well advanced, but still lack a number of features that Archiboard provides.

Testing

Once everything was set up, a friend dialled onto the BBS remotely and Archiboard successfully picked up the line, allowing him to log on. Everything went smoothly as the user moved around, accessing various areas including the file and message areas. No problems were encountered during the limited test, and the user logged off successfully. I was able to change the user's level, allow him to access a special area I'd already created, and broadcast a message. It must be noted, though, that the BBS was set up without the use of *Binkley*, which is a mailer package. An initial trial using it did result in problems when a user tried to log on.

Archiboard	
Supplier	*Supreme Software Systems Ltd* *21 Courtenay Close* *Chapel Break* *Bowthorpe* *Norwich NR5 9LB* *Tel. 01603 745077*
Price	*£65 + £2 p&p + VAT*

Summary

On the whole, I found the whole experience of setting up Archiboard to be quite straightforward, and the limited testing showed no problems. However, the best test of all is prolonged use of the package over a period of time, which is beyond the scope of this review. Archiboard is very flexible, easy to install and set up, has an extremely powerful script language and can be used over an Econet or AUN-equipped Ethernet-compatible network. However, it does require a rudimentary knowledge of comms in general, and someone new to Bulletin Board software will find setting it up a little daunting. It is also a shame that some options are not explained in the manual. A demo version of Archiboard is available in the 'Comms' file area on the Digital Databank BBS.

You can mail me at jstonier@digibank.demon.co.uk, or user 1 on the Digital Databank BBS: 01707 323531 (24hrs).

The Canon BJC-4000 and

The BJC-4000 is a flexible inkjet from the Canon range which offers both black and white and colour capability. It is designed to appeal to users who primarily print in black and white but who also have a colour requirement. Mono printing is extremely fast (about twice as fast as the BJ-200 on average) due to a special high-speed black ink cartridge and printing can be at a resolution up to 720 dpi using interpolation. However, it can also produce high quality 360 dpi colour prints. The inks have been specially developed by Canon for this printer and are fast drying and water resistant.

RISC OS 3 Turbo DRIVERS

The printer is shipped with a BJC-4000 specific version of the new V4 TurboDrivers. Timing tests on a Risc PC indicate that the TurboDrivers still offer a significant speed advantage over the standard Acorn drivers, returning control and completing the print between 3-4 times faster for an average page. The TurboDriver software also supports advanced grey-component replacement, which prevents over saturation and produces more accurate colour reproduction.

The BJC-4000 is supplied with the TurboDriver software (and DOS/Windows drivers), manual, printer cable and a set of colour inks for £249 + £10 p&p + VAT (£304.32 incl.) Suitable for all models of Acorn RISC computer with RISC OS 3.1 and !Printers 1.22 or later. 4 MBytes and a hard disc recommended. Available now direct from Computer Concepts.

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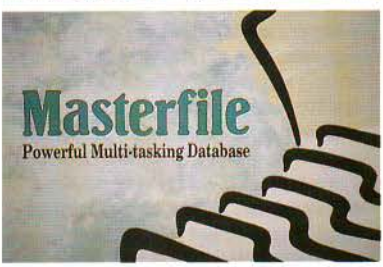

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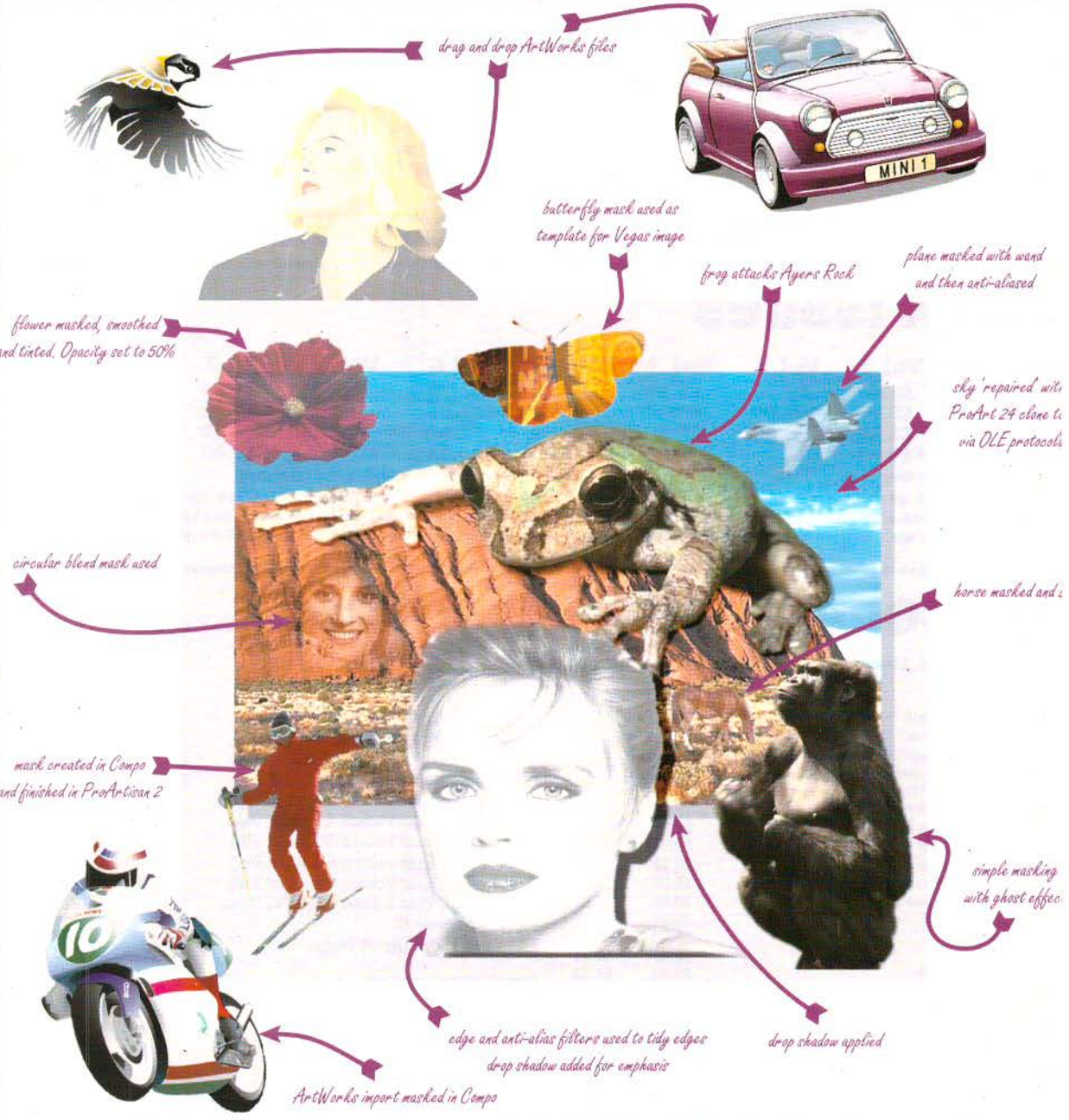
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